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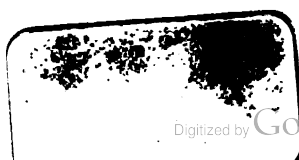
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21

INSTITUTIONS

OF THE

PRACTICE OF MEDICINE.

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21.

THE
INSTITUTIONS
OF THE
PRACTICE OF MEDICINE;

DELIVERED
IN
A COURSE OF LECTURES,
BY
JO. BAPTIST BURSERIUS,
DE KANIFELD.

TRANSLATED FROM THE LATIN,
By WILLIAM CULLEN BROWN.

IN FIVE VOLUMES.

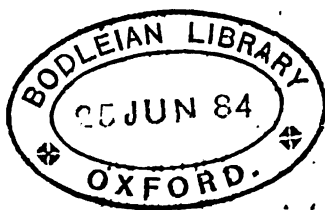
VOL. I.

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ADVERTISEMENT.



THE Editor of the following Institutions was induced to undertake the ungracious task of translating the four closely printed volumes of the original, by the very warm manner in which the Work has been recommended by several eminent Medical Professors and Practitioners, both here and elsewhere, and the consequent general and pressing demand upon the Booksellers for it. So urgent, indeed, for many months past, has this demand been in different parts of the country, but particularly at the University of Edinburgh, and so few copies of the original had been transmitted from the Continent, that to supply the deficiency either a New Edition of the Work, or a Translation of it, seemed

indispensable. For many reasons, it appeared probable that an accurate Translation would prove more acceptable, and of more extensive utility to the Public, than a new impression of the original itself; principally, however, on account of the rapid decay into which the Latin language in this island is universally falling; a fact, whether it is to be regretted or not, which cannot be denied. Besides, the imparting of instruction and beauty of diction being in a great measure incompatible, strictly didactic Works certainly lose much less in the translation than those of another description; and a Celsus, a Lommius, and a Gregory, with a slender catalogue of others, are phenomena of such rare occurrence in Medical Literature, that it is presumed few readers of refined taste apply to Medical Authors, for any pleasure or advantage to be derived from them, beyond the information they contain. Hence, when the value of time in the attainment of knowledge is considered, even to readers of the last class, this Translation may prove of considerable advantage; since probably the profundity of an Erasmus himself in Latin, or of an Henricus Stephanus in a knowledge of Greek, when compared with the facility with which a commonly well educated Roman or Greek used to read or speak his vernacular language, falls far beneath mediocrity. This being admitted, in an age like the present, distinguished for its ardent pursuit in the investigation of the various departments of human knowledge, and in which the veneration of mankind has

been transferred from the mere scholar to the philosopher, it becomes a duty to render the different sources of information as accessible as possible to all ranks of men. And translations of this nature, so far from proving inimical to the diffusion of classical erudition,—of which the Editor professes himself a warm admirer,—by facilitating the different sources of useful science, will leave more leisure for indulging in the gratification and emolument to be derived from reading the beauties of ancient poetry and history, which cannot be conveyed in a translation, and thus will ultimately tend to promote that kind of education, which, being the foundation of all others, in none is more requisite than in the student to whose discretion the lives of mankind are eventually to be intrusted.

It is to be regretted, that the Author did not live to finish his plan, having been prematurely cut off by an abscess in the right kidney, before the appearance of the last volume of his Work, which, being posthumous, is consequently not in that state of perfection in which it would probably have been produced to the world had the author survived to superintend its publication. The merit of the Work has already been well known for some years past on the Continent, where it is held in great estimation; and the English reader will now have an opportunity of judging for himself, and appreciating it accordingly. The Translator is sorry for having been under the necessity of inserting at the end of

each disease, a farrago of drugs and remedies scarce known or heard of in this country; of which some are completely inert, while others are absolutely contemptible or disgusting. Thus, who can refrain from laughter, when the learned and judicious Burserius gravely enumerates, among other strengthening remedies recommended in a state of convalescence from fever, soup of frogs, vipers, snails, and other loathsome animals, which, independent of the disgust they are apt to occasion to patients whose stomachs must necessarily be very delicate, cannot possibly possess any restorative virtue superior to that of other animal soups and jellies? But, perhaps the Author, in consequence of his public capacity, considered it as incumbent on him not to omit mentioning remedies of every description, either possessing, or supposed to possess, any kind of efficacy in the cure of particular diseases. On the whole, much more will be found to be, admired in these volumes than to be, reprehended: while they are still farther recommended as affording means of attaining information at the fountain-head, on every subject connected with the Practice of Medicine. On which account the Translator has been particularly attentive in accurately transcribing from the original, the various references to a great number of medical authors mentioned in the course of the Work.

With regard to the execution of the Translator's task; as the description of a disease requires only

a plain easy style, the same thing is applicable to the translation of such a description; and, indeed, had any other composition been requisite, he would most likely have left the task to some other pen, more capable of doing it justice. If he has transfused his Author's meaning with tolerable fidelity, he has attained his principal aim; and the faults which may have escaped him, he trusts in no measure affect the real utility of the Work. With regard to re-translating (if he may be allowed the expression) the latinised names of certain continental medical authors, with which he was unacquainted; although he generally formed a pretty good guess with regard to the proper name, he considered it as being less awkward that he should retain the Latin termination given it by the Author, than run the risk of setting down one existing in no language. If he has in one or two instances committed a mistake of this kind, he hopes the indulgent Reader will deem it excusable, and overlook it, as being totally unconnected with the merits of the Translation in other respects.

It has been found impossible to comprehend the four closely-printed Volumes of the original, owing to the difference of the two languages, the smallness of the Continental type, and thinness of the paper, in less than five common Octavo Volumes; which will appear in succession by the time the Student has digested the contents of the prece-

ding one. Upon the whole, he hopes, that, even in its present state, it may prove an acquisition of considerable importance to the Medical Literature of this Country.

AUTHOR'S PREFACE.

MEDICINE has been very properly divided into *Theory* and *Practice*; the former of which teaches the preparatory branches of knowledge, and lays the foundation of the whole study, the latter comprehends almost the entire art, and, to a certain extent, raises and completes the superstructure. For, it is the business of the theoretical department, to explain the principles of Anatomy, Physiology, Pathology, the general doctrines of Diagnostics, and Therapeutics, accompanying these with a Methodical and careful review of the different articles of the *Materia Medica*. But, as it treats of the elements of the science, and, in every well regulated University, is assigned to Students before they begin the study of the practical part, it has very commonly obtained likewise the name of the *Institutions of Medicine*. It is evident that the one branch must indispensably precede the other.

For who is capable of attaining the knowledge of a disease, its causes and effects, or preventing the bad, and restoring the good, health of mankind,—which is the peculiar province of the Practice of Medicine,—without a previous acquaintance with the structure of the living system in health, its powers and natural functions; unless he is capable of distinguishing what is salutary from what is pernicious; and, lastly, unless he has ascertained the *criteria* betwixt good health and bad, and the management suitable to each? But when due attention has been given to this previous study, one becomes better prepared to commence that of the more useful and respectable department, termed the Practice of Medicine, which displays the history and nature of diseases; considers their different origins; enumerates the symptoms, both Diagnostic and Prognostic, peculiar to each; carefully notices the indications, as they are called; and, guided by reason and experience, prudently determines what method of treatment is best calculated to each; so that, in this way, it becomes fit for the double office of preventing the bad, and restoring the good, health of mankind. This, again, when transferred to the patient's bed-side, is denominated *Clinical Practice*, to which three other branches are subservient; namely, Regimen, Surgery, and Pharmacy.

As I have resolved to take into consideration the latter of these two departments of Medicine, I shall begin with the class of fevers, as being the disease of most frequent occurrence; which not only very often.

attacks patients of itself, but is usually found combined with a variety of other complaints. In doing so, I am sensible that I undertake a very difficult task, perhaps not aware *nostri quid valeant humeri, quid ferre recuscent*; since, in the whole extent of the Practice of Medicine, there is scarcely any other subject involved in greater obscurity; a truth of which I have not only been sensible from the time, at an early age, I first began the study of the Practice, but have ever since found it confirmed by daily experience. But the more I read on the subject, the more I found myself lost in a maze of perplexities; so inconsistent with each other did the characteristic marks, causes, and methods of cure, laid down by Authors, appear. Some again there were, who endeavoured to refer to a few genera the whole variety of fevers; while others, by their complicated divisions and subdivisions creating great confusion, extended them to a much greater number. For, however willing I had been, I could not have given my assent to the opinion of the first set, as I had learnt by experience, that all the fevers, which practitioners have an opportunity of seeing daily, cannot possibly be comprehended under a few genera only; since several occurred to myself, which, though different in their nature and symptoms, had I followed such arbitrary distinctions, I must necessarily have confounded. It therefore remained for me to have recourse to the other set, and to espouse their opinion. But, to omit no particular, I was somewhat afraid, lest the divisions

framed by them should exceed the bounds of nature, or should have more subtlety of argument than foundation in truth to recommend them. Hence, I warmly debated by what opinion it were better to abide. It likewise not unfrequently happened, that I found fevers described under one and the same name, which, on comparison, differed as widely from each other as it is possible to conceive ; and, on the other hand, I have observed the self-same fever (as clearly appeared from its description and symptoms), characterised by various denominations. These and similar untoward circumstances occurring every day, prevented my getting rid of my embarrassments. Still, however, I did not despair. I relied now entirely on searching for, and carefully perusing, all the books which should be published from time to time by the most learned men ; attentively marking wherein they agreed and wherein they disagreed ; and investigating the source of their contrariety of opinion. Having continued this irksome task for several years, I next resolved to put the opinions and hypotheses of others concerning fevers to the test of experience, and to give them an attentive consideration, that thus I might clearly perceive which of them was most reconcileable to the truth, and which receded farthest from it. The substance, such as it is, of many years study, thought and practice, is comprehended in this volume, which, I should say, were designed for the improvement of Students, if, in doing so I did not seem to arrogate too much to myself. Nor shall I say more with regard to the

execution of the work ; let every one, on perusing it, judge for himself. For, why should others be deprived of that liberty of opinion, which I have always considered myself as intitled to enjoy ? But, in justice to myself, I will not allow, that a few omissions, which I have purposely made, and in doing which I was in some respects justifiable, are to be considered as any loss. Let me not, therefore, be accused of borrowing from the ancients the principal divisions and differences of fevers, although they be not at present universally adopted ; for, had I departed far from them, I should have considered it as revolting against nature, which those fathers of the art so closely pursued. With regard to names, I have in general retained such as have been long in common acceptation among physicians ; nor have I adopted any new terms, unless as synonyms, or as expressive of new facts or diseases, with the view of preserving that connection which ought to subsist between us and our ancestors, and which otherwise would be dissolved. But, wherever it was thought proper to apply several names to any fever, I thought it adviseable to subjoin its synonyms, to prevent the confusion which would arise from a different mode of denominating it. In the choice of these, however, I have preferred my own judgment to that of others, having frequently observed, that, for the most part, they have been carelessly adopted, or improperly applied. I own, I might have set aside several kinds of fevers, as being, like species, equally referable to some o-

ther genus, but it appeared to me better in some measure to comply with custom, than, out of too great a zeal for reforming the genera of fevers, to add to the difficulties of beginners. However, as often as an opportunity occurred, without creating trouble to them, of reducing under one head several fevers, I most earnestly did so, or, at least, hinted in what manner and when it might be done. I have enlisted under the banners of no particular sect; nor did I ever regard who were the authors of such and such opinions, but what the merits and probability of these opinions were. And, as the imparting of useful instruction to my pupils was the object I had all along in view, no one, I hope, will wonder at my having been perhaps unnecessarily minute on some subjects with which such as have gone through their theoretical course of studies ought to be well acquainted. For, though I consider it as an indispensable part of their duty, to be thoroughly grounded in these particulars, before they enter upon the practice, (which indeed has been judiciously ordained by the statutes of Universities), still I uphold that there are certain fundamental branches of the science which can never be too much inculcated. Probably I myself shall be thought by some to have dwelt too much on the doctrine of causes and controverted questions, or that I have delivered my opinions with unbecoming freedom. Some allowance, however, must be made for the effects of ancient habits, and the peculiar circumstances in which a public teacher is

placed, on whom his pupils consider themselves entitled to call for his decided opinion in every case, though we have seldom and cautiously done so, and then only when obscure and difficult points presented themselves, the discussion of which, sometimes, for the sake of exercising their judgement, we have considered as neither unprofitable nor unpleasant, to exemplify to them in what manner and order to proceed, and what arguments to employ, to arrive, with some probability, at the knowledge of unknown causes their manifest effects, or to remove occasional difficulties. I have every where enumerated as many medicines as possible, both simple and compound, employed in the cure of each disease, that in the very ample variety of those with which the medicine of the present day abounds, I might not seem defective, nor destitute of the necessary arms to repel the foe.

I would not, however, have it supposed, that, in enumerating them so minutely, I meant to recommend the indiscriminate use of them all, and on every occasion, as they do who oppress their patients with such a farrago of medicines, as to add to the distress of the sufferers themselves, and entirely to derange the operations of nature. For I have at all times both reprobated and avoided this profusion of drugs of every description, confining myself to a few chosen ones, and trusting principally to the powers of nature. I am well convinced, that it is equally blameable (especially when we have to contend powerfully with a disease) to be scantily

provided with medicines, as it is to fall into the opposite error of dealing in an immoderate use of them ; as if nature, to which the majority of cures ought to be attributed, could frequently effect nothing of herself. Into one or other of these extremes, however, inexperienced practitioners very often fall. But as a skilful physician differs from a mountebank by distinguishing diseases and their causes, and, according to the variety of these and the nature of the indications, has occasion to employ sometimes one, sometimes another kind of remedy, and knows when they ought to be prescribed ; on that account I wished to familiarise the student to the most efficacious remedies, which have either been adopted by the most approved authors in the cure of any fever, or in the removal of a particular symptom of it, or those I myself consider as of peculiar excellence. Thus every person, at the beginning of a disease, on attending to its causes, can select a few of the number for his use, or refrain from all of them together, and, in some measure, lie by when he perceives that the powers of the system itself are adequate to overcome the complaint. I have purposely omitted the formulæ (which many think of great consequence), for several reasons, but chiefly that young students might not devote more time to the copying and committing of them to memory, than to the more important business of carefully attending to diseases, and investigating their proper indications, without the knowledge of which, like empirics, they would fall into a mode of practice equally

disgraceful to themselves and pernicious to mankind. For it is the business of a judicious practitioner, prudently to accommodate simple medicines to the indications which he has already maturely considered ; or, if he requires compound ones, to blend such as are applicable not only to the peculiar complaint and its causes, but also to the patient's age, temperament, and sex, and to the country wherein it prevails, the season, and other circumstances. Nor will that be very difficult, if they remember the nature and powers of medicines, and the forms of prescription, the teaching of which is the peculiar province of general Therapeutics and Pharmacy. But if they be desirous to profit by the examples of others, or to compose their own formulæ after their manner, they will find in the works of both the older, and likewise the more modern writers of the greatest reputation, precepts on the subject, or proper formulæ annexed to their works, the most elegant compositions they can have for their imitation. Several of them, however, I own, I have occasionally borrowed from the works of others, and added to my own ; but I have chiefly done so when mention was made of any universally celebrated remedy, to save young men the disagreeable necessity of searching for them elsewhere. With regard to style, I have uniformly preferred that which appeared plain, easy, and perspicuous, to lofty, eloquent, and figurative composition, which I have always considered, in such cases, as quite foreign to the subject. Hence I have freely left to

orators, beauty of diction, which seems to be merely calculated to delight the ear, since, for the most part, when the attainment of the arts and sciences is our object, *ornari res ipsa negat, contenta doceri*. It was my wish at least, that the barbarous jargon, which formerly so long disgraced the schools, might be banished as much as possible. I have not, however, abstained from using certain technical terms at present universally adopted, though not strictly classical; nor have I rejected new terms, though barbarous, when it was requisite to treat of modern ideas and inventions. For I did not chuse, in order to appear extremely nice in point of Latinity, to imitate those, who, rather than be guilty of any violation in this respect, generally become very obscure, or are forced to employ such tedious circumlocutions as cannot fail to excite disgust. These are all the observations which I thought it necessary to premise. It only remains to request the reader, whatever success may attend these my labours, to give them a fair perusal, and, if I should fail in my attempt, to make indulgent allowance for the integrity of my intention.

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A

SHORT COMMENTARY

ON

INFLAMMATION.

1. **I** FORESEE, that not a few, on clearly perceiving from my preface, that no one is entitled to begin the study of the practice of Medicine before bestowing much pains on that of the Institutions, will immediately alledge, that I undertake a superfluous task in discussing Inflammation; because, in that part of the Institutions termed the Pathology, the nature, causes, effects, and differences of inflammation, as well as those of other diseases and symptoms, are usually explained at sufficient length.

2. Though this be an undeniable fact, of which I am well aware, still it ought to be remembered, that, notwithstanding pathologists have treated of all these subjects, they have done it in so brief and cursory a manner, that they not only pass over many other things necessary to be

known, but omit the whole plan of cure. Nor will they find that any blame is to be attached to Pathology on that account, if it be confined within its proper sphere, and made to arrogate nothing which, in the strictest sense, belongs to the practice of medicine only *.

3. Left students, therefore, for whose benefit this treatise is composed, should be under any hesitation on reading the term Inflammation, of which I shall have occasion to make frequent mention in treating of fever and other diseases, being struck with its novelty, and not sufficiently knowing how far it extends, with how much danger it is attended, towards what part its force is directed, what are its terminations, and, lastly, in what manner its approach may be prevented, and its presence removed: Before proceed-

* Pathology, properly so called, differs not a little from the practice of medicine; for the latter, according to both Boerhaave, (*De Cogn. et Curand. Morb. Prolegom.* § 2.), and his pupil De Haën, (*Prolegom. Prælect. Haën in Herm. Boerhaave Patholog.* pag. 7. § 2. Vienn. 1779), is that part of the science which teaches how to discover and remove disease. On the other hand, even particular Pathology, not even the full and extensive system of Fernelius, consisting of seven books, though it investigates the nature of each individual disease, nevertheless says not a syllable of their treatment. I do not, therefore, altogether understand why some of the Boerhaavians of the present day consider pathology and the practice of physic as synonymous terms.

ing to the enumeration of fevers, I considered it as not only useful, but necessary, to give a practical treatise on Inflammation in general. For thus they will have no cause of confusion to retard their progress; nor shall I be under the continual necessity of wasting time in irksome repetitions.

4. Observing, therefore, the same order in which diseases are described by physicians, I shall set out with the name and nature of Inflammation; and, after briefly stating the principal opinions of both ancients and moderns, I shall espouse that which appears supported by the greatest probability. In the next place, having, as well as I can, explained its effects, and pointed out its remote and predisposing causes, about which there is less controversy, I shall proceed to determine its various differences. Nor shall I neglect occasionally to shew its terminations, both good and bad, and the characteristic marks by which every particular may be properly distinguished. Lastly, I shall subjoin the *indications*, as they are called, by which the cure is regulated, and the proper remedies duly administered.

5. When any part is affected with unusual heat, redness, tension, swelling, and pain, and, at the same time, an uneasy throbbing is felt internally, it is said to be in a state of *inflammation*, because its effects nearly resemble those arising

from the application of fire. Wherefore, when all or most of these symptoms concur, they evidently constitute the disease called by us *Inflammation*, and by the Greeks φλεγμονή *. That its proximate cause is involved in great obscurity, appears, in no small degree, from the very great diversity of opinion which prevails concerning it.

6. And, to begin with the most ancient and celebrated medical authors, little respecting Inflammation, or its production, is to be found in the works of Hippocrates. But the part in which (if he can be said to allude to it any where) he speaks somewhat more explicitly of the origin and theory of Inflammation, is in the book *De Capitis Vulneribus* †, where he observes, *Partes ulcus ambientes inflammantur, ac intumescunt propter sanguinis influxionem*. But his disciples, departing a little from their preceptor, and losing sight, as it were, of the *influx of blood*, which he had assumed, or considering it as insufficient, taught, that inflammation took place in consequence of an *excessive and acrid flow* into a particular part, and its remaining *acrid and glutinous* ‡; and being, moreover, *pituitous, copious, and viscid* ||. Lastly, discussing the consequences of the rupture of a vessel within the breast, if fever has supervened,

* From φλεγμαίνω, to burn.—† N. 18. ed. Marinell.—‡ Lib. De Glandul. N. 5.—||. Ibid. N. 6.

or excess in drinking or venery has been at all indulged in, they give the following explanation of it elsewhere *: *Wounded parts become dry and warm, and attract humidity from the neighbouring veins and muscles. But, when they have attracted this humidity, they swell, become inflamed, and are affected with pain, &c.* From all which I think it plainly appears, that an unusually copious influx, not only of the blood itself, but likewise of every acrid, glutinous, pituitous, and sluggish fluid, together with attraction of humidity from the neighbouring parts, was esteemed in those remote ages the cause of inflammation.

7. But a very different opinion was held by Erasistratus, distinguished both for his antiquity,—since he undoubtedly lived in the age of Seleucus Nicanor †,—and for his skill in medicine. He imagined that inflammation arose, occasioning the motion, such as happens in fever, *when blood was transfused into the vessels destined for containing air* ‡. But air was formerly supposed to be contained in those vessels which we now call Arteries. For, as they are generally found empty in dead bodies, it was natural to ascribe such an office to them. On the other hand, if ever they

* Lib. II. De Morb. N. 11.

† Considerably upwards of 300 years before the birth of Christ.

‡ C. Cels. de Med. l. 1. in præf. p. 5. ed. Cominian.

found them full of blood, they immediately concluded, that the blood had rushed into passages, which it never had been designed to enter, and therefore had occasioned inflammation, such as the Boerhaavians of the present time would ascribe to an *error loci*.

8. After these, Galen *, Oribasius †, Aetius ‡, Paulus Ægineta §, together with the other pri-

* Method. Med. l. x. cap. vi. where the following observations are to be met with.—“Cujusmodi autem sit phlegmones affectus, tum in libro de inæquali temperie, tum in eo qui de tumoribus præter naturam est inscriptus, docuimus. Admonuisse tamen et nunc te non sit inutile. Cum sanguis calidus copiosior in aliquam animalis partem procubuit, majora ejus vasa protinus extenduntur, utpote abundantiae continendæ non sufficientia, ab his deinceps quæ minora sunt. Mox ubi nec in iis satis continetur, exsudat sors in ea ampla spatia, quæ inter vasa sunt, sic ut etiam omnia, quæ in composita carne habentur, loca occupet. Atque hæc quidem est phlegmones affectio.”

And lib. xiv. cap. 2. where he adds: “Cum sanguis copiosius in aliquam partem procubuit, sic ut ab ejus particulæ vasis nequeat contineri, exilitque aliquid instar roris ex ipsis vasis in ea muscutorum spatia, quæ similaribus corporibus, ex quibus componuntur, interveniunt, utique tumor ex plenitudine oritur; cui succedit cutis tensio, et in alta carne cum pulsu dolor, et tangenti renixus quidam, et rubor, et calor, ipsa nimirum cute ea, quæ subjecta sibi caro patitur, sentiente. Similis jam dicto et in visceribus affectus, &c. Et ad Glaucon. l. 2. cap. 1.

† Synop. l. viii. cap. 24.

‡ Tetrabibl. iv. sermo. 2. cap. 31.

§ De re Med. l. iv. cap. 17.

cipal Galenists *, having investigated the subject somewhat more deeply, made inflammation to consist in an uncommon flow of unusually warm blood into any part, which, filling the vessels in such a manner as to exude like dew, and forcibly enter the empty spaces, occupies and distends all the neighbouring muscular parts. Nay, some have added †, that the disease increases in violence, when the fluid contained in the affected part begins to putrify, and occasions an unnatural degree of heat. Hence they were led to believe, that they could afford an easy solution of the heat, redness, pain, tumor, and other phenomena of inflammation. But, if I mistake not, they have not had a competent idea of the reason of the unusual influx of blood into the part affected; or, if they have, they do not appear to me to have given a sufficiently clear account of it.

9. Moreover, as they observed, that inflammation at one time came on imperceptibly and quickly, at another manifestly and slowly, they supposed that it took place in the one case by *influx to the part*, in the other by *congestion*. Next, according as the blood was pure, or mixed with other humours, they established different varieties

* Fernel. Pathol. l. vii. c. 2. River. Prax. med. l. i. c. xi. Sennert. Med. Pract. l. v. P. i. c. v. &c.

† Oribas. l. c.

of inflammation. Thus they conceived, that from pure blood arose *exquisite phlegmon*; but that from the same, when conjoined with bile, pituita, or black bile, originated the *erysipelatus*, *edematous*, or *scirrhus phlegmon*. On the contrary, if the bile, pituita, or black bile, exceeded the quantity of blood, properly so called, and excited inflammation, in the way we have already pointed out, in that case, they thought that inflammatory erysipelas, or edema, or scirrhus, was generated.

10. But, a sect of chemists next succeeding, Willis *, who flourished during their time, attempted a different explanation of inflammation. If his hypothesis, however, be properly examined,

he will immediately be found scarcely,
 Orgasm. if at all, to differ from the Galenists.

For he assumes as a principle such a *febrile effervescent state of the blood*, that, on account of the *orgasm* of any particular part, it with difficulty passes through the minute vessels; nay, that stagnating in them, it first causes obstruction, and, accumulating and being effused from the vessels, afterwards phlegmon. He informs us, however, that two things are requisite to the production of inflammation, namely, heat of the blood, and obstruction of the minute vessels combined; that the one is incapable of produ-

* Pharmacop. Ration. P. 2. § i. c. viii.

cing the effect without the other, as he exemplifies by proper illustrations.

11. Sylvius de Le Boe, the contemporary of Willis, and attached to the same sect, departed somewhat farther from the Galenists. Though he supposes that the blood is obstructed, not only in the capillary vessels, but likewise, with Galen, in the spaces of the adjacent parts, or even effused from its proper channels ; he is of opinion, however, *that it soon becomes warm, excites an unpleasant sense of heat in a sensible part, and next inflammation ; in as far as the aerial and more volatile and subtil parts, destined to temper those of both an acid and saline (alkaline) kind, shortly begin to disappear from the blood which is in a state of stagnation in its distended vessels, and in certain other parts ; whence, both being rendered more acrid, rise up against each other with greater violence, and, on account of the oily parts present in the blood, (as abounding with phlogiston), occasion a warm effervescence **. Hence it is manifest, that, according to Sylvius, a *stasis* and heat of the blood are requisite to produce inflammation ; with this proviso, That the *stasis* necessarily must precede the inflammation, and not succeed it, contrary to the opinion of the Galenists, and Willis himself. He approaches, however, more nearly to the opinion of the Galenists, when

* Prax. Med. l. 2. c. 40. § xiv. and xv.

he contends, that the heat and inflammation arise from the blood's effervescing : for, in tracing inflammation from unusual heat of that fluid, and the increase of heat from the stagnation and putrefaction of the same, they seem to differ from Sylvius, not in fact, but merely in terms, and in their mode of explanation.

12. But, we cannot by any means pass over in silence the opinion entertained by Ettmuller, in antiquity and erudition next to those already mentioned, and equally distinguished in point of chemical knowledge. For, at different times, I think, he published two opinions on the nature of inflammation, both of which deserve to be stated accurately and fully. In the first, the increased heat is proposed as a principal effect of inflammation ; but, in order to comprehend what is the nature of this increase of heat, and whence it proceeds, he first investigates the origin of animal heat, and affirms, that it is occasioned by a *volatile acid tempered by a spirituous one, while it exists in its natural, or oily state, and acts more powerfully upon its kindred alkali*. Therefore, from their mutual action on one another, he conceives natural heat to arise. But, he says, that the explanation of the more intense heat, which is evolved in great quantity in inflammation, is altogether different. For he attributes it to the *influent, or innate, spirit of the vessels being more violently excited to motion, or to both as it were*

opposing one another. And, to put the matter in a still clearer point of view, he uses a very familiar example, which he borrows from Van Helmont. *Let us suppose*, says he, *a thorn thrust into the finger, in consequence of which pain is excited, succeeded by heat, redness, and, lastly, tumour. The thorn is not in itself warm; it cannot therefore be considered as the formal, but merely the occasional, efficient cause of the increase of temperature which supervenes; and, from the nature of the injury, is only succeeded by it, from the nature of the pain, by moving more rapidly the influent spirit, to the part affected, both through the nerves and vessels; from the accelerated motion and collision, as it were, of which, and the innate spirit together, both the acidity, formerly latent, now becomes evident, and the heat, until then moderate, grows more intense and preternatural. But, such a thorn is discoverable in every case of increased heat and inflammation: Such, for example, is present in the clotted matter of milk coagulated in the breasts; such a thorn is the acid in pleurisy, which corrodes the pleura, and affects the other side of the lungs, in consequence of the action of which inflammation and suppuration of these parts are induced. Such a thorn is there in the stinging of bees, &c. in dust falling into the eyes, in the variolous matter exciting ophthalmia, and in numerous other instances of a similar kind*.*

* Inst. Med. Therap. § iii. op. om. T. 1. P. I. p. 413.

13. Therefore, he does not hesitate to pronounce the *accumulation of blood* in a phlegmonic tumour, to be a *supervening symptom*, but not the *cause of the heat*. For, he observes, *that on account of the pain, the fibres are constricted, the diameters of the veins are diminished, the return of the fluids is checked; whence stagnation, and at length, bloody tumour and inflammation, supervenes. Hence, on the thorn being plucked out, all inflammation and pain cease.* And a little afterwards he adds: *Therefore, the cause of the swelling is not the blood, but the painful irritation, or thorn, which, in the case of an internal cause, is an acid pernicious to the parts of the system out of the stomach, and which accelerates the motion in the innate spirit, by which the spirits, formerly temperate, become otherwise, and the acidity, formerly also temperate, becomes intemperate and manifest.*

14. The congestion, therefore, or stasis of the blood, and obstruction of its vessels, which others hold to be the proximate cause of inflammation, is esteemed by Ettmuller, in his first disquisition, concerning the origin and nature of inflammation, as an effect of the cause of inflammation, and only as supervening upon it. But the entire, or proximate cause, as they term it, he considers as consisting in the *thorn* already spoken of, that is, in a certain acrid principle, which affects the sensibility of any part. For, when a sense of pain is

produced, the *influent spirit*, or, as I would explain it, the *nervous influence*, and the blood itself, from all quarters is attracted to the part affected, and is there accumulated. But, at the same time, the *innate spirit*, or, to use phraseology better adapted to modern ears, the *irritability* of the vessels, and *elasticity* of all the fibres, are roused to motion and action. From such a reciprocal action and re-action, or conflict, and *collision*, heat and effervescence arise. Moreover, when the nerves are pained, and the muscular fibres are violently irritated, spasms, or unusual and vehement contractions, take place in the part affected, by which the course of the blood, and especially its return by the veins, is rendered not only more difficult, but is sometimes entirely precluded. Hence its retardation, congestion, tumour, tension, and the redness of the inflamed part, may easily be derived. Such appears to me to be the substance of the first opinion of this celebrated author concerning inflammation.

15. I shall now proceed to the other. In it, contrary to what he supposes above, he is entirely of opinion, that the tumours, called Inflammations, must be derived from the accumulation of blood detained in the venous capillaries and circumjacent parts, soon beginning to grow warm there, and exciting a disagreeable sense of pain

in some sensible part*. But he supposes, that such a congestion takes place, because a greater quantity of blood enters by the arteries, than can be admitted and returned by the veins. *The material proximate cause of inflammation, therefore, in this place, is said by him to be, a collection of blood, stagnating in some part, on account of its return from the arteries to the veins being so impeded, that more flows in by the former, than can flow back by the latter.* Moreover, he most carefully inquires and points out, in how many ways this return may be retarded and stopped. He next turns his attention to the principal and peculiar phenomena of inflammation, namely, the heat, redness, tumour, and pain, and endeavours to give an explanation of them in the following manner.

As the blood, which causes inflammation, is a red, spiritous, and warm matter, therefore it will warm the parts, in consequence of which they will necessarily become red; but as more flows in than returns, while it thus stagnates and remains in a part, that part of course becomes swollen; and, as the fibrous parts are distended by the tumour, pain, and consequently inflammation, will be excited. Lastly, he says, that inflammation is converted into suppuration, or abscess, when the stagnant blood undergoes corruption, as in general gradually hap-

* Op. Med. T. 2. P. 1. Colleg. Pract. § xviii. p. 595.

pens. But, considering the physiological opinions of his time, he acutely and subtly argues, *if nothing at all can return in the inflamed part, and moreover, a reciprocal motion of the influent spirit takes place, by which the innate spirit may be supported, that at length gangrene necessarily supervenes, while the blood, deprived of its vital influent spirit, corrupts and putrifies, in consequence of which the part, as soon as the innate spirit is suppressed, dies.*

16. In the mean time, Sydenham *, who seldom has recourse to the opinions of others, but always forms his own theories, according as faithful observation and experience seem to point out, thought that he had discovered a peculiar condition of the fluids in inflammations, as he every where sets it down as consisting in actual inflammation and intense heat of the blood itself. Nor does it concern him, whether the motion be retarded, or increased, in one, or several different parts. However, when the blood is in this state of inflammation and effervescence, and carried by the febrile motion all over the body, he supposes, that certain parts of it which are inflamed or very warm, are conveyed at one time to the brain, at another to the pleura, sometimes to the lungs, and sometimes to the skin, and are deposited in

* Particularly § ii. c. 2. p. 122. and § vi. cap. 3. pag. 305. Oper. Ed. Patav.

these parts, thus giving origin to phrenitis, pleurisy, peripneumony, and erysipelas. Which, indeed, though it not unfrequently happens in acute fevers, and though I would not deny that it may take place in certain kinds of inflammations, which arise without any preceding disease; yet, if we examine the matter more narrowly, we shall find that the same account cannot be given of its origin in all cases. For, frequently no inflammatory diathesis of the blood precedes them, but is only their consequence.

17. But, in the next place, we must inquire into the opinion of those who were fond of referring all the phenomena occurring in the animal economy to the laws of mechanics and hydraulics. Bellini *, who holds a principal place among them, in mentioning inflammation, along with the ancients, assumes increased heat of the blood, but conjoins with it obstruction of the capillaries. This obstruction was esteemed of such consequence by Pitcairn †, that he believed inflammation to proceed from no other source, than from blood stagnating and sticking in the capillary arteries. But Hoffman acknowledged such an obstruction, not only in the red arte-

* De Feb. Prop. xxi. p. 237. De Morb. Pect. de Peripn. p. 403. and throughout

† Elem. Med. Phys. Math. l. 2. c. ix. and xiv.

ries, but also extended it to the lateral, ferous, and lymphatic arteries, nay, even to the veins. For he defined inflammation *a stasis not so much in the arteries and venous tubes, that usually carry the blood, as in the lateral ones, which, on account of the narrowness of their diameters, naturally do not admit the red globules of the blood, but only the thin lymphatic fluid* *.

18. Hence it does not appear to him difficult to conceive, why the part is suffused with redness. Nor does he think it more difficult to understand, why the *heat* and sensation of *burning* is felt in the part. For, he observes, *the blood partly flowing continually through the half-obstructed, or constricted vessels, is carried along with greater velocity; partly also being prevented from flowing freely, it regurgitates to the larger branches, and produces in them a more frequent systole and diastole; whence there takes place a great mutual attrition of the sulphureous particles, and excessive heat, which is more sensibly felt in proportion to the greater sensibility of the part affected.* Next he attributes the pain to the *pressure* which the nerves undergo from both the *smaller and greater vessels being over-distended.* But he holds the *lensor and thickness* of the blood, by which the vessels are obstructed, or the spastic constriction of the small

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* Med. Syst. T. iv. P. 1. sect. 2. c. 3. § v.

vessels, by which a passage is denied to the fluids, to be the cause why *the free and equable course of the blood through the small arteries and veins is interrupted, and why it is driven, contrary to the purpose of Nature, into the small receptacles of the thin aqueous fluid.* How far these speculations are just or erroneous in the opinion of the most eminent physicians, will appear in the sequel.

19. Hence, however, proceeded the universal persuasion, especially amongst the *mechanical* physicians, that the proximate cause of very inflammation was an obstruction of the small red arteries, or the vessels next the red ones, whencesoever it arose, whether from increased moles, or lentor of the particles of the blood, or diminished capacity and diameter of the canals ; and that from this obstruction the motion and impetus of the blood toward the obstructed parts is increased, just in proportion to the degree of the obstructing cause ; while, at the same time, its velocity, and consequently also its return to the heart, is increased, that it may be impelled to quicker and more violent systoles ; whence the principal phenomena of inflammation, namely, the heat, pain, tumour, and fever, may be easily explained and understood.

20. This explanation of the matter was approved of, and adopted by the celebrated Her-

man Boërhaave *, who departed little or nothing from his predecessors. For his notions of inflammation taking place *per errorem loci*, and of series of decreasing vessels, into which the sanguineous, serous, or any other kind of particles, of too great size for the diameter of the vessels, have entered, seem so hypothetical, and, for the most part, so contrary to anatomical and physiological truth, that since Haller †, Senac ‡, Caldani, §, and Oz-zoguidius ¶, with whom I have been long on terms of intimacy, have published their observations upon them, they require no farther refutation. But, this philosopher was well aware with what obstacles he should have to encounter, if he derived inflammation merely from obstruction of the smaller arteries. For he perceived, that the peculiar symptoms of inflammation neither arose from that cause, nor could be understood to do so ; and that, moreover, it was not sufficiently distinguished from simple obstruction. For which reasons, to support his theory the better, he added attrition ; and pronounced inflammation to be

B 2

* Aph. de cog. et cur. Morb. § 370. 371.

† Elem. Phys. T. 2. l. vi. sect. 2. § xiv. ed. Venet. p. 176.

‡ Del cuore. T. 2. Nel. Supplim. c. xiii. p. 342. et seq.

§ Inst. Path. c. ix. n. 112.

¶ Inst. Med. vol. 2. § 511. et seq.

attrition of the red arterious blood, stagnating in the small vessels, proceeding from motion of the rest of the blood agitated, and impelled more forcibly by fever.

21. But, though otherwise a most faithful observer of nature, he did not perceive that the small red arteries, which he took for granted to be every where perfectly conical and convergent, are in fact by no means so; since, by anatomical examination, they are found to be, in a great measure, cylindrical, and, on this account, when once the red particles have entered them, they will not stagnate in their extremities, on account of their lessened diameter, as he had erroneously conceived. Nor did he explain, as indeed he could not, in what manner *attrition* could take place in stagnant blood *from the motion of the rest of the mass*, since he points out no power by which the blood is forced *a tergo* into the obstructed vessel, and the impelling power of the heart is not adequate to that effect, as experiments made on living animals shew;—nor can fever, which he calls to his aid, afford him any assistance, because inflammation has often been found unaccompanied by it. This illustration of inflammation, however, given by Boerhaave,—which he has treated at length in his *Aphorisms de cognoscendis et curandis morbis* *,—was so agreeable

* § 372. to § 386.

to most of the physicians of his time, that no other was received with greater applause, and more fondly cultivated for many years.

22. The first that arose in opposition to him was without doubt Gorter, formerly one of Boerhaave's disciples, who afterwards acquired the reputation of an excellent physician, and became a celebrated author of many works. Investigating the phenomena of inflammation with more nicety, he first remarked, that the pulsation of the arteries, in which either none, or at least much less, was perceived before, became sensible, and greater in inflammation, which could not happen, as is manifest, without the action of the arteries being increased. But, he has endeavoured to prove by experiments in hydraulics, "That this pulsation * cannot happen from one or two branches of an artery being obstructed." His words are: "From these it appears, that the fluid passing through a ramified canal, from the trunk by branches, as happens in arteries when one branch or orifice is obstructed, because it does not transmit more than the hundredth part of the fluid, does not increase its velocity, beyond the hundredth part, and that it does not urge more into this shut orifice, than into the la-

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* Chirurg. Repurgat. l. iii. c. 3. and Comp. Med. Tract. 47.

teral parts of all the branches and trunk, which small change cannot be perceived, as would happen in the obstruction of the minutest inflamed part. Moreover, by anatomical experiments, it is demonstrated, that, if a small branch of an artery be compressed, the blood formerly flowing through the open branch is distributed by anastomoses, which occur in great number among the small arteries. It is likewise ascertained, that, in consequence of the obstruction or compression of the branch of a small artery, the part does not become red and swollen, but that the blood pursues its course by other anastomoses."

23. Wherefore he could not be brought to believe that the "pulsation and inflammation arose from obstruction of the arteries." Nor was he much staggered at the objection, "That when a great artery is tied, it beats with greater violence above the ligature;" for the obstruction in inflammation, as he properly observes, occurs in the small arteries, not in their trunks, in which the result of the experiment is different from what happens in their branches. For as the latter are situate very far from the heart and its impulse, and communicate by numerous anastomoses, when the blood meets with any obstacle in them, after some slight oscillations, if I may be allowed the expression, it flows back towards the trunk, and, leaving the little vessel where the

obstruction is, as being full and over-distended, it prosecutes its course through other open and free branches. On the contrary, in the former, on account of the violent impulse of the heart in their neighbourhood, and the greater quantity of blood discharged by it than it can turn into the lateral branches, which are but few in number, it follows as a consequence, "that a great artery, when tied, will beat more violently above the ligature;" a fact which must be admitted by every body. For, in the greater trunks there is no place where so large a quantity of blood, impelled with great force, could be received, and to which it could be directed. Moreover, he is of opinion, that the burning heat, which succeeds inflammation, without doubt evinces, that *increased vital motion*, in any particular part, *is the cause of inflammation; while*, on the contrary, *obstruction, from its nature, produces cold*. For *the vital motion in us* appears to him to be the *cause of natural heat*. Hence, departing from the opinion of his preceptor, he pronounces "the proximate cause of every particular inflammation, arising from an internal cause, to be increased vital motion in any branch of an artery, by which the red blood is propelled into the lymphatic arteries, and the remaining blood is compacted into a state of lentor." But, that general inflammation, or *inflammatory fever*,

called *ardent*, arises, when the vital motion is accelerated, not in one branch only, but in the whole arterious system.

24. From these facts, therefore, he concludes, that all those things which excite the arteries to unusual motion may cause inflammation, both *general and particular*, according to the greater or lesser extent of the parts affected; and he has illustrated his ideas by well selected instances, deserving of perusal. According to Gorter, therefore, inflammation is that violent influx of red blood into the lymphatic or serous arteries, which is caused by the greater and more accelerated vital motion of any artery, or its branch. But, by the vital motion he understands that action only, which the vessels of a living animal perform by alternate contraction and dilatation, to support the circulation of the blood and life itself. This *increased vital motion* of Gorter has a near alliance to the increased *tonic motion of the vessels*, which the followers of Stahl * assert to be requisite to the production of inflammation, in addition to the noted power or wisdom of the soul, by which they pretend that the vital principle, or action of the heart, is excited, and the motion of the blood is increased, and directed to the obstructed vessels, and circulated.

* Stahl. de Inflam. Pathol. and Juncker. Tab. xx,

25. But, contrary to the opinion of Hoffman, and all those who, supposing an obstruction of the small red arteries to exist, affirm, that the motion of the blood becomes quicker through the semi-obstructed, or straitened vessels, or through the remaining open and free passages, while that which comes from the trunk is more forcibly pushed into the obstructed canals;—Sauvages*, with much more acrimony and confidence, contends, that it is altogether repugnant to the laws of mechanics and hydraulics, that the celerity of the blood, or moving powers, should be increased in proportion to the force of the obstacles opposed to it, as was commonly supposed. For, he observes, that every person sufficiently skilled in hydraulics, holds it as an indisputable theorem, That if the middle part of branches proceeding from any tube be obstructed, the velocity, with which the fluid passed through the trunk, is diminished by one half, unless the impelling force be increased fourfold. And, if two thirds of the branches be obstructed, the same power must be increased eight or ninefold, that the fluid may move with its usual velocity. Therefore, the celerity of the blood in the free vessels, or the moving force in the trunks, does not increase from

* Differt. sur l'Inflammation, § 43. 44. and Nosol. Method. Class. iii. N. 31. to 102.

the obstruction of the minute vessels, as many physicians not sufficiently skilled in the laws of mechanics had conceived. Nor can it be objected, that the vessels thus obstructed are *elastic*, and that therefore the more they are distended, the more they will restore themselves. For their coats, though they were truly elastic, and were distended by such surcharge, could not return to their former situation, so long as the collection of stagnant fluid exerted its force upon them. But even though the fluid should recede, and the distension be diminished, still they would shrink only in proportion as they had been distended; nor could they, at most, impart to the contained fluid more celerity than in proportion to the force they had derived from it. That, however, would by no means be sufficient to accelerate the motion of the circulating fluids, as was required. And it appears, not only from universal observation, but is granted by Sauvages himself, that in every severe inflammation the motion and celerity of the blood (when it is attended with fever) is augmented. Therefore, in order to give some explanation of this increase of motion, since it could be derived neither from the laws of hydraulics, nor from elasticity, he has recourse to the power of the mind, at the desire of which, with the Stahlians, he thinks, that the heart is prompted to more violent action, and to struggle,

by increasing the motion of the fluids, in such a manner as to overcome the obstacles thrown in their way.

26. Though these opinions, which Sauvages defends with much ingenuity, approach very near to the truth, and entirely correspond with the experiments which the most ingenious philosophers have made upon living animals; still they do not appear to me to be of such weight as to authorize him to adopt the opinion of the Stahlians, concerning the soul being the cause of all the motions, particularly that of the heart, that he might be the better enabled to support the doctrine of increased impetus of the blood to an inflamed part. They should rather have made him suspect the obstruction to which inflammation was attributed, to be supposititious, as inadequate to occasion the phenomena of inflammation, or rather that it should be sometimes considered as its effect; or, if ever it can be esteemed as the proximate cause, that something is conjoined with it, by which the vital motion in the part obstructed is accelerated. On due reflection, these conclusions would have been drawn as a necessary consequence; nor was it incumbent on him to have recourse to the opinion of Stahl, which has not only fallen into disrepute among men of judgement, but also by a single experiment of

Haller, is proved to be a mere fiction and dream *.

27. But, taking for granted obstruction as the cause of inflammation, although it could not account for the increase of motion, still Sauvages would not have been obliged to have recourse to the assistance of the soul, if, besides *elasticity*, which of itself he knew was not sufficient to produce the increased motion, he had properly attended to that innate power of the vessels, which some denominate their *vital*, others their *organic* power, chiefly belonging to animals, and which very probably arises from the muscular *irritability* of Haller, or from *sensibility* of the nerves, or from both combined. For, when it is excited in a particular part, and acts with unusual force, as often happens, the arteries beating with greater frequency and violence, manifestly increase the motion of the blood in the part, while the action of the heart has not been increased in the least, but remains unaltered. The truth of this assertion is confirmed by the testimony of physicians, who

* It is as follows : If the aorta of a frog, whose head and spinal marrow are removed, be bound, or the heart itself and its vessels, being tied, are taken out of the body, in the same manner as before the heart may be stimulated to action, although the wisdom or power of the soul can no longer be supposed to remain. Vide Haller Elem. Phys. l. iv. p. 324. note k. p. 323, note t. Item. T. 2. l. vi. sect. 2. § xiv.

have found the stroke of the arteries in a particular part so increased, as to resemble topical fever, without any change of the heart's motion whatever. Nay, taught by experience, they affirm, that the motion of the blood may differ in different parts of the body, and therefore that the velocity and frequency of the pulse in disease varies according to the parts affected *. Quickened motion of the blood, especially in the arteries, is usually discovered, not only in inflamed parts, but likewise in their neighbourhood, in arthritic or gouty complaints, or other pains in the joints; in the head, when affected with hemicrania or cephalalgia, in the excruciating pain of the side felt in pleurisy, and the like. But this fact is so well established, that it can be clearly seen in living animals subjected to anatomical dissection. For the celebrated † Haller often observed the blood in one part flowing very slowly, or even cease altogether, while in another it circulated with great rapidity.

28. Lastly, this author appears to me inexcusable, for having been so sanguine as to expect that every difficulty would be removed by assu-

* Bourdaux Recherch. sur les Pouls, p. 313. et seq. Pechlin. Observ. 2. l. 5. Hoffmann. Medicin. System. T. 1. p. 115. Albertin. Comment. Acad. Bonon. T. 1. p. 387. &c.

† Second Memoir. sur le Mouvement du Sang. exper. 90.

ming for a cause increased motion of the heart *. The blood may happen to be propelled with greater force and velocity through the whole system ; but it does not follow, that by the influence of the mind, it should exert its force with more violence upon the obstructed arteries, and attempt to remove the obstructing causes. The motion, both of the heart and blood, is totally unconnected with the power of reason. Such an idea is contradictory to the laws of hydraulics, which it would be improper that even the mind itself should be capable of subverting or changing at pleasure. What happens when no fever, or, more properly speaking, no increased velocity of the heart and arteries, except in the part inflamed, succeeds inflammation, as has been often observed ? Does the mind then increase the motion of the heart ? Does it not happen to forget the exercise of its function ? Why does not the mind employ the same aid in other obstructions of the vessels and viscera ? Would not the same

* Almost all the opinions of the Stahlians, concerning the office of the soul in preserving and restoring health, are supposititious. Heister, in his *Deffert. de Med. Mechan. Præstantia*, has advanced many arguments in opposition to them. Many others have done the same. But there is still extant a letter of Josephus Antonius Puiatus, to his son, against Sauvages, in which his notion of the cause of inflammation and fevers is refuted. Vide *Raccolta d'Opuscoli del. P. Colagera*, T. 50.

cause and end require the same assistance from the mind? But I doubt much that such an increased motion of the heart and blood would always be serviceable in inflammation, or obstruction of the vessels, if the mind attempted to provide against danger in that manner only. At least I should not chuse that the mind were always to provide for my safety by such means.

29. Such are the principal opinions of physicians, concerning the nature of inflammation; and, whatever others worthy of remark remain unnoticed, seem to be derived from those I have already detailed. It is unnecessary, therefore, to exhaust the reader's patience with a particular account of each. I deem it proper, likewise, to pass over the more recent conjectures of certain moderns on the same subject; but especially of those who, giving too much way to ingenuity, in order to appear inventors of something original, would persuade us that inflammation consists in some kind of * fermentation of the oily parts of the blood, or in unnatural tenuity of its coagulable and fibrous

* Whoever wishes for farther information concerning the objections to this opinion, may consult two little works, the one composed by a friend of mine, whose name is not prefixed to it, and is to be found in the *Diarium Med. Pet. Arthesii*, T. iv. N. lxx.; the other, the work of Franciscus Panticichus, a physician of Forli, addressed to myself, and published there 1771, entitled, *Confutazione d'una Lettera*, &c.

part *, or in excess of the igneous principle, or in evolution of phlogiston, or in inflammatory diathesis : Although these suppositions are attended with equal difficulties. But I think proper to abstain from the examination of them, principally that I may not appear to proclaim war against their learned authors or admirers ; and besides, time alone will best determine their several merits.

30. But though most of these opinions seem in some measure repugnant, if not totally opposite, to each other ; yet, if they be coolly and impartially considered, it will readily appear, that some of them are very similar to one another ; that others differ rather in the terms employed than in reality ; and that a third set, which at first sight seem less capable of demonstration, are not altogether, or at least not widely, distant from the

* Hewson, whose opinion is also adopted by Calisen, thinks that the coagulability of the blood in inflammation is diminished. The principal argument they both employ, is the slower coagulation of the *inflammatory crust*, with which the blood, when drawn, is covered, than of the red crassamentum. For they assert, that it is formed by the coagulable lymph, very much attenuated, and consequently more slowly coagulable. The arguments in opposition to this shall be pointed out afterwards, when we come to treat of the inflammatory diathesis. In the mean time, suffice it to observe, that most inflammations are removed by blood-letting. But who would promise himself any good from such practice, if the coagulability, or power of cohesion, of the blood were diminished ?

truth. Besides, from what has already been said in explanation of some of these opinions, or is warranted by anatomical and physiological fact, it will be most expedient for every one, even though very slightly conversant in such speculations, to consider for himself, what there is in each of them reprehensible or defective, and what there is deserving of approbation and reception. Leaving this matter, therefore, to be investigated by others at greater length, I shall proceed to execute my remaining task, and what I undertook at the outset, namely, such an explanation of inflammation, as shall appear most consistent with reason and the laws of nature.

31. It is allowed by all, that when a part appears redder than usual, warm, swelled, painful, and accompanied with a sensation of throbbing internally, it is affected with inflammation. Hence we may draw the evident conclusion, that the general mass of blood rushes into that part in greater quantity, and with greater violence, than commonly takes place, as was long since supposed and taught, first by Hippocrates and his disciples, (§ 6.), and next by Galen and his numerous followers, (§ 8.) But, if as much blood were returned by the veins, as is carried to the part by the arteries, in that case I think it probable that no inflammation would take place. For no inflammation of a particular part necessarily succeeds an unusually

great afflux of the blood to all parts of the system, as happens in almost every acute fever, so long as the same quantity of blood which is brought by the arteries is again carried off by the veins. Therefore, before any part becomes inflamed, swelled, warm, and painful, one of two alternatives must take place; either the blood, conveyed by the arteries, is not wholly received again into the veins, (which may happen from many causes), or it is propelled into the part in such a manner as to force and dilate the orifices of the lateral vessels, or passages called inorganic pores, and thus makes its way into parts not designed for it to enter. But in both ways the blood flowing in fills and distends the small vessels to a great degree; and those which are commonly supposed capable of admitting the red globules only one by one, now receive several together, are enlarged, and the red colour, which before was imperceptible, becomes quite manifest. Nor is it a rare occurrence for the blood from such vessels, generally carrying only one red globule at a time, to be forced *

* Dissection shews the cellular membrane in inflammation filled and distended. The same fact is confirmed by the attentive examination of membranes that have been affected with any considerable inflammation; for they, for the most part, remain much thicker, harder, and fuller, than they are found naturally; the cavities of the cellular membrane being still dilated, and in a state of turgescence. But, when I say that the blood is effused into the cellular membrane, I do not

through both the exhalent vessels and open inorganic pores of the coats, into the adjoining cavities of the cellular membrane; which Galen (§ 8. note f.) formerly, and Haller *, with many others of the present time, have clearly proven by dissection. Nor perhaps is it erroneous to imagine, that it is pushed into the serous arteries, if there are any such, which differ from the arteries carrying one globule, and are therefore not red; that it stagnates and accumulates there, and presses upon the parts in the vicinity, as Hoffman and Gorter supposed.

32. In the same manner as the redness, tension, and tumour of a part, readily proceed from dilatation and distension of the small vessels, and from the blood being sometimes effused into other parts, so the unusually violent pulsation of the arteries depends on the more rapid and copious direction of the blood to the part. With regard to the

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mean the red part of it only, but also the other parts of which it is composed, namely, the serum and lymph. Nay, it is farther very probable, that sometimes its coagulable part, as it is called, if not entirely, is principally let out, and exudes into this substance. This supposition is supported by those white or yellowish concretions, which are found like membranes about viscera that have been affected with inflammation. The observations of the celebrated Pallucius, which occur in *Arts nuova*, &c. p. 94. 95. are in favour of this opinion.

* Opusc. Pathol. Observ. xiv.

burning heat accompanying inflammation, I am well aware, that, as Physiologists are not agreed as to the generation of heat in the body, it is of very difficult explication *. Probably, however, one would not be far short of the truth in saying, that it was excited † by the accumulation and in-

* Vide Haën. Rat. Med. P. 2. c. 10. p. 124. and P. 3. c. 3. p. 129. where many observations well deserving attention are to be met with.

† Quesnay was of opinion, that the natural state of the igneous principle consists in cold, and that it does not grow warm of itself, unless from certain causes it be thrown into the *calorific motion*. In fact, its presence, or quantity, alone does not excite heat, as naturalists already know. Moreover, he maintained the opinion of two kinds of heat subsisting in the body; namely, *natural* heat, and that arising from *acrimony*, or perceptible to sense. The former seems to arise from the igneous principle being thrown into the *calorific motion*, the latter from acrid substances acting upon us, and exciting a sense of heat. *Traité des feux*. T. 1. c. 3. Artic. 1. § iv. v. p. 112. Gorter also has a similar distinction of the heat of the human body; and, if I mistake not, properly. It is likewise worth remarking, that sometimes great heat succeeds increased motion of the circulation; while at others it is conjoined with moderate pulsation of the arteries. Heat, therefore, does not increase in the direct ratio of the motion, at least of progressive motion, but perhaps various circumstances of the body in motion, and of the motion itself, constitute the difference. There is likewise a degree of heat which cannot be detected by the thermometer, but is perceptible to sense alone; such is that we have remarked as arising from acrimony. Of this kind is that uneasy heat, with which we are troubled from checked perspi-

creased motion of red blood, or by the reciprocal and intimate collision and attrition of its parts, or by the evolution and motion of the igneous principle, or, in other words, phlogiston, which comes nearly to the same thing. But while these things take place, the nervous filaments must necessarily be separated and torn from one another. Hence arises pain of various kinds *, or a feeling of pricking, or some other uneasy sensation often different in acuteness, according to the various kinds and degrees of the inflammation, and according to the diversity of the fluids and parts affected. Lastly, the pain, when it is violent and of long continuance, excites spasm, which, conjoined with repletion of the vessels striving against it, is probably the cause of the hard and vibrating pulse, so generally the concomitant of inflammation.

33. But, to account for the more copious and rapid influx of arterious blood to any part, it is not at all necessary, as has already been shewn, along with Sauvages, to have recourse to increased

ration, or of which we are sensible on entering into phlogisticated air, whilst, in the mean time, scarce any difference is indicated by the thermometer betwixt it and the atmospherical air.

* Pain is at one time the effect, and at another the cause of inflammation. Here it is considered as the effect; afterwards (§ xxxv.) it shall be esteemed the cause. . . .

force of the heart ; nor would such increased force, if it really did take place, immediately excite inflammation. For, were it sufficient to produce this effect, every simple obstruction, on fever supervening, that is, increased motion of the heart and arteries, as generally happens in fever, from whatever cause it may proceed, would acquire the nature of inflammation, and actual inflammation would ensue ; which, however, is commonly altogether erroneous. Nor is the obstruction of the blood's return by the veins, as Ettmuller supposed, sufficient to occasion such an effect ; for, though that might give rise to congestion, and a particular kind of obstruction, it would not produce inflammation. For it seems to require not only unusual quantity, but force of the influent blood ; which impetus by no means can take place, when the veins are not sufficiently soon emptied. The venous return being prevented, an obstacle, as it were, is opposed to the influx of the blood, and therefore some retardation must necessarily take place in the arteries with which the veins communicate ; unless the circulation of the blood through them be quickened by some other cause.

34. But to what cause shall we ascribe the more copious and accelerated flow of the blood through the arteries to a particular part ? If it is allowable to hazard a conjecture in this case, I

think we may set out with this law of hydraulics, that fluids pass along in greater quantity, and with greater facility, the less the resistance opposed to them is. But the power of resistance is diminished in the arteries in various ways, especially if their diameters are enlarged, or they expel the contained fluid sooner than usual in a given time. It may be proper, however, to remark, that every dilatation or rapid evacuation of the arteries, although in either case a great afflux of blood is occasioned, is not sufficient to produce inflammation. For the vessels may be fuller than usual, and blood may be accumulated in them, in consequence of which a part may become red and swollen, without the pain, heat, and other symptoms of inflammation supervening. This is manifestly the case in long-continued redness of the eyes, arising from laxity of the vessels of the *adnata*, or when it is the sequel of severe ophthalmia; in which, without doubt, the vessels are turgid and red from too great a quantity of blood, while the complaint is accompanied with neither pain nor heat. Moreover, the cutaneous vessels are filled with a greater column of blood than usual, by means of cupping-glasses, the bath, fomentations, heat, and the sun's rays, occasioning excessive redness and swelling of the skin, nay, sometimes even a black colour: yet this does not constitute inflammation.

The skin likewise becomes red when rubbed rather roughly, the course of the blood being thus quickened, and the resistance to that which is to flow in being lessened, without inflammation following. Something else, then, besides the too copious influx and congestion of the blood, is required to produce the symptoms of inflammation.

35. The same thing had been observed by Ettmuller, (par. 12. & 13.), since he asserted, that the blood rushes into a part with such violence as to induce pain and heat; that is, with such force as was either excited by some irritation, or itself occasioned such irritation, if the congestion were to deserve the name of inflammation. His opinion is supported by the suffrage of experience. The skin, as has already been observed, becomes red and warm when rubbed hard, but this does not proceed the length of inflammation. But if the friction be continued severely for some time, the part then becomes painful and swelled, and at length is affected with real inflammation. If a grain of sand, or any small body causing irritation, has got into the eye, or between the eyelids, shortly afterwards the eye becomes pained, it reddens, tears, grows warm, and, at length, swells and inflames. On removing the painful stimulus, the inflammation entirely disappears. On puncturing, or in any other way stimulating a small nerve, pain, redness, heat, and tumour

succeed*; or, in other words, inflammation is the consequence. An instance of this happens in the case of the thorn in the finger, mentioned by Ettmuller, or in whitlows produced by the prick of a needle. The same thing attends the long-continued application of any acrid substance to the skin: for in that case, redness, heat, tumour, and pain, are the consequence. Therefore, besides excessive influx of blood to a part, to occasion inflammation, the part must previously have been acted on by some stimulus, or irritation, or pinching.

36. Such is the mechanism of the living body, that, when a stimulus is applied to any part of it, the blood flows thither in greater abundance, and with more rapidity, and, accumulating, stretches the nerves, increases their sensibility, and begets heat, redness, pain, and tumour. And this fact is so undoubted and uniform, that no one can be ignorant of it. But in what manner it occasions such various and extraordinary phenomena, is still a matter of doubt. For those who have asserted that a stimulus acts by exciting the energy of the nerves or fibres, with which the vessels are provided, in my opinion, have advanced nothing sufficiently strong to support the question.

* The pain excited in inflammation is of a double nature, the one kind is its effect, which I have remarked above, (xxxii:), the other its cause. We speak of the latter here.

The secret power by which a stimulus acts, is still involved in great obscurity. Winterlius* has gone a step farther, and, after an examination of all the arguments on the subject, he attempts to persuade not a few, that the arteries, when the small ramifications of nerves leading to them, or dispersed over their coats, are in any way irritated, are relaxed and dilated in such a manner, that the blood flows copiously and rapidly into them, less resistance being made to its influx. This opinion of Winterlius, although almost solitary, and unsupported by sufficiently strong arguments, was lately adopted by Callisen †, who was not deterred from embracing it, either by the novelty of the doctrine, or the disapprobation of almost all physiologists ‡.

37. But such as believe in the irritability of Haller, though they know that the fibres contract in consequence of irritation, cannot be induced

* Dissert. de Inflam. Ricker, in an express dissertation in favour of the Boerhaavian doctrine, has also refuted the hypothesis of Winterlius; although he does not support his own cause with equal success. It is to be found in *Fascicul. iv. Opuscul. et Dissertat. &c. Francisci Xaverii De Wasserberg*, p. 212.

† *Instit. Chirurg. Med.* § 197.

‡ Hitherto the muscular fibre has appeared to be contracted by irritation. But it has not yet been proven by any body, that the opposite of this takes place in the arteries.

to believe, that the arteries are dilated by a stimulus. For the arteries, at least the great ones, are every where provided with muscular, and of course irritable, fibres. Nothing, therefore, hinders us from supposing, by analogy, that they exist also in the smaller arteries. Since it appears from the observations of Senac *, Haller †, and others ‡, that even the smallest arteries are endowed with irritability, and that, like the heart, they are capable of contracting on a stimulus being applied. But Nature seems to have bestowed the principle of irritability on the heart and arteries, in order that, on the approach of a stimulus, they might contract, but shortly afterwards become

* Trattat. della Struttura del cuore, T. 3. l. 3. cap. 2. p. 249. et seq. ediz. di Brescia.

† Element. Physiolog. T. 1. lib. 2. sect. 1. § 13.

‡ V. Baldinger, Differt. de Arter. et Venar. vi irritabili, 1766. Vicq. D'Azyr discovered the irritability in the aorta, the crural arteries, and in the body of the vena cava. Mem. de la Soc. Roy. de Med. v. 1. p. 343. Similar discoveries had been made long before, by Maximus, a Roman physician of no small reputation. But the same thing was confirmed lately by the celebrated physicians, Petrus Moscati, (Osservazion. ed. Esperienz. Sul sang. Fluid. e Rappres. sopra l'azione delle Arter. &c. Milan, 1783), and Bassianus Carminati, (Risultati di Sperienz. e Observ. su i vasi sanguigni, e sul sangu, &c. Padova, 1783), by whom it is evidently demonstrated, that the arteries beat from a peculiar and innate power, and that, therefore, they are endowed with irritability.

relaxed ; or, which amounts to the same thing, that the systole and diastole should alternate with one another. This almost uniformly goes on in those parts which are subservient to the vital functions, and are subject to the will. When the heart, therefore, is irritated, whether the irritating cause be removed or continue, it is forced to obey this law of the animal economy ; nor are the arteries less under its control, as appears by the uniform alternation of the systole and diastole in them *. But it may be proper to remark, that both the heart and arteries contract alternately with more celerity, force, and frequency, in proportion to the degree of the stimu-

* A similar *reciprocity of action (antagonismum)* in the whole animal economy, is taken notice of by the celebrated Metzger. See his *Adversar. Med. N. III. P. I. De Antagonismo Naturæ Solenni Diatribe*. Nor can we doubt of this alternation of contraction and relaxation, even when a stimulus has not ceased to act. This is clearly manifested by the instance of sneezing. So long as the irritating cause adheres to the pituitary membrane, the thorax is very much dilated, and a deep inspiration takes place : but shortly after, the intercostal muscles and diaphragm becoming relaxed, a sudden and violent depression of the breast and expiration succeed. These alternate with one another violently and rapidly, so long as the pituitary membrane continues to be stimulated. The celebrated De la Roche affords other examples of the same kind. See *Analys. des Fonctions du System. Nerveux. T. I. p. 261. 262. 263.*

lus applied, or the greater the irritability in each of them happens to be.

38. Let us, therefore, suppose some of the small arteries acted on by an unusual and peculiar stimulus; whether that stimulus be applied to their muscular fibres, or only to the nerves which are distributed upon them, or to both*, (for it cannot be easily determined to which it is applied), it consequently follows, that they will be more powerfully and quickly contracted and relaxed; and that therefore, in a given time, they will be more frequently emptied. But if they are emptied more quickly than usual, they must of course oppose less resistance to the influx of the blood, which will, therefore, flow more copiously and quickly into these than into other parts.

* The celebrated Senac (*D. Coeur*, T. 2. p. 169.) ascribes so much power to the nerves, that he is convinced of the motion of the arteries in a great measure depending on their action. Nor is this altogether denied by Haller, (*Elem. Phys.* T. 2. p. 206. 202. 252. et op. min. T. 1. p. 223. et alib.); and Morgagni entertained the same opinion, (*De Sed. et. Caus. Morb. epist.* 24. n. 20. & 23.). Such a power of the nerves is evinced by the languid or deficient pulse in paralytical limbs, and in gangrene of the lower joints, proceeding from an injury of the spinal marrow, &c. Tissot's opinion ought not to be overlooked; *Tratt. de Nerv.* T. 1. P. 2. art. 6. § 226. et seq. Nor does Comperetus seem to entertain a different opinion; (*Occurs. Med.* &c. § iii. n. 47. et seq.); for he observed a great many nerves, not only surrounding the arteries, but likewise intimately combined and interwoven with their fibres.

Hence that part of the subject of inflammation which appeared most difficult of explanation, by having recourse to the action of a stimulus, is rendered plain and intelligible.

39. Moreover, the stimulus, if it irritates a particular part, which has no great consent with others, unless it be very violent and long continued, inflames that part, but does not occasion fever. For it is not a rare thing for inflammation to exist independent of fever *. But when it acts long, or violently, upon exquisitely sensible parts, and which readily consent with others, it easily propagates its force to other parts, both neighbouring and remote, either by consent of the nerves, (which is most likely), or by communication of the vessels, without shifting its situation, in such a manner that the heart itself is excited to more frequent and violent contractions, and fever, the most usual attendant, or sequel, of inflammation, arises. Sometimes, however, such a stimulus is applied not only to a particular part, but also communicating with the whole blood, or diffused over almost the entire system, it affects all the vessels, but the heart in particular. Then, though the part affected with inflammation be neither endowed with unusual sensibility, nor be so violently irritated, as of itself, by consent of

* V. Van Sweiten, § 271. on Boerhaave.

parts, to be capable of exciting fever, still it is conjoined with it. But, in such a case, fever does not arise from the particular inflammation itself, or its consequences. For it seems to be excited by the cause of the inflammation being more universally diffused, or by the combination of several causes, which of themselves are sufficient to excite fever: or, arising from some other cause, it precedes and accompanies fever; nay, it does not altogether disappear on the particular inflammation itself being discussed. But then the inflammation will neither be genuine, nor primary, nor perhaps particular, or at least not simple, of which in particular we speak here.

40. Nor would I consider it as absurd to believe, that, when the motion of the whole blood is increased, the part in which the inflammation is situate, or to which the greater force and quantity of the blood is directed, is somewhat more violently assailed and pressed, and that hence some increase of pain, redness, tumour, and heat takes place in it: moreover, that it is so harassed and stretched, that at length it becomes spasmodically affected, and obstinate tonic contraction, without relaxation, succeeds the alternate pulsations of the arteries, which, we have shewn already, are constituted by the laws of Nature. And, as the quickened motion of the blood increases friction, dissipates the finest particles, is very un-

favourable to the secretions, agitates the brain, and oppresses the lungs, it ought not to be matter of wonder, if there should suddenly supervene great heat; dryness of the skin, tongue, and fauces; thirst; red and sparing urine; scantiness of all the usual excretions; lentor of the blood, and greater tendency to cohere; head-ach; watching; mental emotion; anxiety; laborious respiration, and other symptoms of increased motion *.

41. Inflammation, therefore, as I have explained already, is excited by a stimulus. But there are many kinds of stimuli, of which, however, only some seem capable of producing it. Neither do these all belong to the class of acrid and caustic stimuli, nor are all those of this kind found adequate to the production of inflammation. For some of them are considered as almost void of acrimony, whilst applied to certain parts of our body, they exhibit the effects of stimuli. Of this kind is atmospheric air, warm water, the

* On the fourth of July 1771, Genesius Rossi, then my pupil, as appears from the work, publicly defended a specimen of this kind of pathology. The work is entitled, *Dissertatio Academica ex Clinica de Præcipuarum Partium Inflammationibus habita*, a Genesio Rossi, Mediolanensi in aula majori Almi Collegii Ghisleriorum, &c. Præsidi Jo. Bapt. Burserio Clinices, &c. P. Professore, data cuilibet Oppugnandi Facultate. Ticini Regii ex Typographia Hæred. Ghidini Impress. Curæ Archiepisc. Episc.

blood itself, and perhaps the nervous influence, if credit may be given to some eminent authors, which cause no sense of uneasiness in other parts, but affect the irritability of the heart in such a manner, that, even in a state of torpor, it is immediately revived. Certain other substances possess manifest acrimony, and sometimes so great as to seem to burn. But these rather destroy and extinguish, than excite, the irritable power of the arteries, heart, or any muscular fibre. Such are vitriolic acid, nitrous acid, butter of antimony, lapis infernalis *, &c. Some also, although not free from acrimony, prove innocent to some parts, while they irritate and injure others. We have an instance of this kind in the crocus metallorum and cantharides. The former is said to cause scarce any uneasiness to the eyes, but is so pungent and stimulant to the fibres of the stomach, as to excite vomiting. The latter, on the contrary, for the most part, have no effect upon the stomach, but act so violently on the kidneys and bladder, that they often give rise to the phenomena of inflammation in these parts. Many other things prove the same fact. But one thing is most certain, that from tartar emetic being infused into the veins, the stomach is affected, and vo-

* Or, acidum commune acerrimum. These very acrid and caustic substances, seem first, perhaps, to induce tonic spasm of the fibres, and likewise, shortly after, to burn and destroy them.

miting is excited *. When the extract of black anemone is taken by the mouth, it appears that the eyes, particularly, are irritated and inflamed †; and, lastly, that there is such an affinity between them and the solanum furiosum, or belladonna, that a solution, or powder of it, given internally, so contracts the iris, that it seems to be altogether obliterated ‡.

42. Hence it is no difficult task to define what those kinds of stimuli are by which inflammation may be induced; since, from certain observations, all of them are not known. I shall therefore touch on some of them only, concerning the action of which physicians are agreed. It has been imagined by Lancisi and Gorter, that the arteries are lined by a very fine mucus, to defend them against injury from the blood in its passage. But if such a mucus exists, (which is denied by others), and has acquired acrimony, and adheres to, and irritates, the coats of the vessels in that part, to a certainty will the irritability be excited, and, of course, the pulsation of the artery will become stronger and quicker. In the same manner,

* Lorry Memoir. de la Soc. Roy. de Med. v. 2. p. 162.

† Stoick, De Ufu Med. Pulsat. Nigric, Vindob. 1771, et Spalowski, Dissert. de Cicut. &c. p. 20.

‡ Tissot. De Nerv. e lore Mulattie, T. 1. part 2. art. 6. p. 31. edit. Venet.

if this mucus is any where deficient, so as to expose the inner surface of the arteries, and render it more irritable and sensible, the blood, as it passes along, will act as a stimulus there, and increase and accelerate their systaltic motion. This same effect will be produced by any other fluid, which, by its vitiated quality, can corrode or irritate the arteries, or nerves any how belonging to, or communicating with them. Under this head come various acrimonies of the blood, both spontaneous and accidental: excess, or sudden evolution, of phlogiston in any part; its dissipation being checked; the admission of cold air; inspiration of an epidemic acrid; and, perhaps, the inflammatory diathesis, as it is called, of the blood itself, whencesoever it be derived.

43. And, since we are on the subject of the inflammatory diathesis of the blood, it will not be foreign to our purpose to dwell a little on the investigation of its nature. Wherefore, when the blood drawn from a vein congeals into a thick, tenacious mass, and is covered with a white, hard, compact coat, both the physician and bystanders at once exclaim, that it is in a state of inflammatory diathesis, because, in general, such is the appearance of the blood in inflammation; and many, besides, are of opinion, as I myself have often heard, that the blood in the vessels is so thick, dense, and cohesive, while it still circulates warm,

that it coheres and stagnates in the small red arteries, which they suppose to be perfectly conical or convergent. But this seems to be very far from the truth. For although the blood, after it has grown cold, appears thick, tenacious, and coagulated, still it would be ridiculous to suppose, that it exists in that condition within the vessels, while it is impelled by the vital motion, performs its circulation, and remains warm and fluid. In the next place, it is an undoubted fact, that, in inflammation, such a coat is by no means always to be found *. Nor, when such a diathesis manifests itself, is inflammation always united with it. Frequently, in sound and vigorous habits in those labouring under arthritic complaints, scurvy, or syphilis; in intermittents, colic, rheumatism, and gout; in malignant fever, hydrophobia, and chlorosis, or in pregnancy; such a disposition of the blood is discoverable †, while the patients are entirely free of any inflammation ‡. Since,

* Haën, *Rat. Med.* P. i. c. iv. p. 74. n. 6. *Borrh. Prax. Med.* T. i. p. 265. *Swieten*, T. iii. p. 169. T. i. p. 177. *Pisonis Specileg. Curat.* p. 122. &c.

† V. Haller. *Phys.* T. 2. l. v. sect. 3. p. 87. *Ballonius* also observed an inflammatory diathesis of the blood in healthy people. *Epid.* l. 2. p. 235.

‡ The blood of horses, even in the best health, taken from a vein, on cooling, exhibits a similar coat, like lard. Shall it be considered as a proof of inflammation, or of inflammatory

therefore, the cuticle, or inflammatory, firm and tenacious crust, with which the blood is sometimes covered, is at one time conjoined with inflammation, at another found unaccompanied by it, it can neither be called; nor esteemed, truly an inflammatory diathesis of the blood, unless it be combined with other symptoms which more strictly belong to inflammation.

44. Therefore, to avoid any mistake, judicious practitioners are accustomed to consider two kinds of lentor in the blood when cooled; namely, one of a *warm* or *inflammatory*, the other of a *cold*, *spontaneous*, or *mucous* kind. They suppose the former to depend on increased and violent, the latter on diminished and languid, action of the solids. In the former, the blood is very firm, tenacious, less easily divisible, and perhaps abounds more with phlogiston, and is therefore more acrid and irritating. In the latter, it is rather lax, viscid, inert, mucous, and for the most part is said to be free particularly from *warm*, or igneous acrimony. Although it must not be denied, that, in this last kind also, sometimes that *polypus-like* and very firm crust, of which we have already spoken, is observed, beneath which, however,

diathesis? By no means; for it is the peculiar and natural crasis and constitution of that blood. I will not deny, however, that even in horses, when labouring under any inflammatory disorder, that that coat is found thicker and firmer.

the stratum, or crassamentum, is generally more scanty, soft, and lax, and surrounded with much serum. It is, moreover, of consequence to know, that a diathesis of the former kind sometimes precedes, sometimes, and, for the most part, succeeds inflammation. When it precedes it, and any degree of acrimony is conjoined with it, so as to act any where as a stimulus, then it may be deemed the cause of any inflammation that may ensue: But, when it is subsequent to the inflammation, it appears that it is then the effect, not the cause; a fact which may be put in a clearer point of view, by a familiar illustration. Let us suppose the finger of a person in perfect health to be severely bruised. Immediately, to prevent the risk of inflammation, as far as possible, let a vein in it be opened. The blood thus at first drawn, is neither denser nor firmer than usual, nor does it shew any, or at least but a very slight, indication of the inflammatory crust being present. But the finger nevertheless beginning to swell, and becoming very painful, and inflammation supervening, let blood again be drawn. It then concretes into a dense, tenacious, firm mass, and is covered with that thick, fibrous, hard crust, similar to tanned leather. The same thing happens in pleurisy, or any other inflammation which comes on suddenly; for the blood which is drawn at first, and afterwards, when the disease has not

yet increased much, scarce, if at all, differs from the same in its natural state. But that which is let a second or third time *, for the most part has acquired the inflammatory diathesis, and exhibits the buffy coat. It appears, then, that the inflammatory diathesis is the effect, not the cause of inflammation.

45. But it is a matter of absolute uncertainty †, how the blood comes thus to be changed by inflammation, although men of the first abilities and learning ‡ have paid the utmost attention to it. Those who, along with Quesnay, have con-

* This is according to the observation of almost all practitioners. But the celebrated De Haën in particular confirms it. (*Rat. Med. P. i. c. vi. p. 74.*) His words are, “Nonnunquam sanguis initio febris acutæ, aut etiam topicæ inflammationis, missus crustac aret: habetque eandem aut in altera, aut in tertia, aut in quarta venæ sectione.” He adds, “in morbis maxime inflammatoriis in nullo sanguine, quotiescunque missio, aliquoties crusta ulla est.”

† Haller (*Elem. Phys. T. 2. l. v. sect. 3. p. 87.*) observes, “Multa quidem in hac crustâ paradoxa sunt, quorum causas nondum recte tenemus.” De Haën, (*Rat. Med. c. 2. p. 21.*), having explained the causes which produce such a matter, says, “Utinam, simul constaret, qua arcana lege dictæ causæ hanc materiam, producant?” And Mich. Sarcone (*Istor. Ragion. dell’ Epid. Sofferta in Napol. nel. 1764, part 2. p. 370. n. 1.*), confesses his total ignorance of the production of the inflammatory crust.

‡ See Haller l. 2. p. 85. where the names of many who have investigated this subject, are quoted. Nor would I ex-

tended, that the serum of the blood is condensed and coagulated by the increased heat occasioned by fever, and derive the inflammatory crust from that cause, seem to have been altogether ignorant, that in the living system such a degree of heat as is necessary to coagulate the serum *, cannot be excited. Those who assert that it arises, for the most part, from violent action of the

clude from their number Hewson, the latest writer on the subject, both the experiments and reasoning of whom have no weight with me.

* That degree is 148° of Fahrenheit's scale, (Haller, l. c. p. 30.), to which it never arose in the most acute fevers. For, in pleurisy, it scarce arrives at the 102° or 104°, according to the observation of Cleghorn. The celebrated Haverius Maneti, a particular friend of mine, in his notes upon the Dissertations of Sauvages, published by himself in 1764, p. 79. having employed Reaumur's thermometer, makes the following remarks: "Il più alto calor febbrile, inclusive nelle febri accutissime, non oltrepassando il grado quarantesimo del termometro del Sig. Reaumur, e trovandosi ne' pleuritici, la cotenna del sangue assai densa, benchè il calor loro febbrile non soglia passare il grado 31., manifestamente si conosce, che un tal effetto nel corpo umano non dipende dal solo diverso grado di calore, ma che differenti altre cause e circostanze devono concorrere a questa produzione. Il calor delle febbrì mantenendosi sempre tra, i gradi 28, 30, ed il grado 40, ch'è quello al quale arrivare possono le più acute, e veementi, sempre lo credo a portata di poter piuttosto produrre un effetto salutare rendendo il sangue più fluido," &c. And beneath: "La nostra linfa fuori del corpo umano non si coagula che ad un grado de calore intorno ai gradi," 56. &c.

heart *, or increased † motion of the blood, or from spasms, or convulsions ‡, and other causes inducing § contraction of the vessels, point out the causes after which they have observed the inflammatory diathesis to be produced; but they do not explain the manner in which these causes give rise to it. But, however that happens, (for, after so many acute instigators, I should be sorry to lose my labour), it is an indisputable fact, that, if blood fresh drawn from a vein, and still warm,

* Haller, l. c. p. 88. ed. Venet.

† Boerh. de Cog. et Cur. Morb. § 100. et Institut. § 820.

‡ Sarcone Hist. Ragionat. dell' Epidemia Sofferta in Napoli, &c. part 2. p. 370. note 1. He says, "Una delle potenti ragioni della produzione di detta crosta gelatinosa, e della sua moltiplicazione e lo spasmo, e la convulsione.

§ Haller, l. c. reduces these causes to the vital powers, to diseases, to violent heat, to acid spirits, to highly rectified spirits of wine; and he quotes Helvetius, Petit, Quesnay, and Senac, in confirmation of his opinion. Moreover, De Häen (Rat. Med. P. 2. c. 2. p. 19. et seq.) says, that the matter of the inflammatory crust is generated by cold received into the body when warm; by excessive motion; anger; drinking vinous liquors when the habit is plethoric; the nervous, arthritic, or rheumatic acrimony; the miasma of small-pox, scarlatina, and measles; rich living; indolent life; an effeminate way of living; pregnancy; and a peculiar natural diathesis of the blood in certain habits; or, by an unknown contagion of the air. From these causes, he thinks, that the fluids are condensed, the solids constricted, and that thus the glutinous matter, constituting the inflammatory crust, is expressed.

be stirred about by a stick, or shaken in a phial, a kind of fibrous, whitish, tenacious coat, very similar to the inflammatory crust, which receives its name from Ruyfch, who first discovered it, is procured. There is therefore in the blood, in its natural condition, a cohesive matter, distinct from the red globules, affording fibres and laminæ, very apt to concrete, and, on that account, by most people denominated *fibrous*, or *concrescible*. Hence it appears highly probable, that the inflammatory diathesis consists in this fibrous and concrescible part of the blood exceeding the natural quantity, in unusual quantity of the blood, properly so called, and increased mutual contact of the red globules *; whence it happens, that the blood, on its becoming settled, and when much of the igneous principle has escaped, grows more apt to coagulate; but this diathesis, as is vulgarly supposed, cannot consist in coagulation, or concretion, of the blood itself, which, while it is warm and in circulation, cannot take place within the vessels. Indeed, this increased abundance of the fibrous and concrescible part, manifests itself not only in the blood taken from a vein, but likewise in the viscera while in a state of in-

* The celebrated Van Sweiten in some measure agrees with us, (in Boerh. Com. T. 1. § 75. p. 88.), where he observes: Naturalitèr ----- ineft sanguini in concretionem proclivitas: quæ in morbis acutis inflammatoriis agetur.

flammation ; since in dead bodies, that have become cold, they are found covered with a glutinous white or yellow pellicle, which, in the living body, is so fluid as to exude and escape by the exhalents, being accumulated and compacted by the cold into a dense firm membrane. Nor, perhaps, would it be far from the truth to refer such an inflammatory diathesis, not only to excess of the glutinous and concrescible part, to unusual quantity of the blood, and propensity to coagulation, but likewise to add to these causes a ready separation * of its white and coagulable fluid from the red crassamentum, although this last condition seems to proceed, for the most part, from excessive abundance of the same. But there may be many reasons why these two different parts are separated, and gradually depart from one another. This fact is in some measure proven by the compound fluids, namely, such as are composed of various different liquors, of which kind, in fact, is the blood itself. For these, upon losing motion and heat, by means of which they are preserved in fluidity, do not concrete altogether at once, but some parts of them sooner, and others later. Thus, the watery part of wine is soonest affected by cold ; it separates and concretes, but the vinous and stronger parts are af-

* De Häen and Sarcione, l. c. seem to incline to this opinion.

fects more slowly. In the same manner cold coagulates the red part of the blood first, but the whitish, fibrous, lymphatic or concrescible part, as it is called, last; which, therefore, in blood taken from the body and kept still, rises upwards, and floats longer, until it also becomes more consistent, and at length altogether solid. Why does it not undergo some similar change from heat, motion, quiescence, or any other cause within the vessels? Can the intimate union of two dissimilar parts, from any of the causes existing in, or acting upon us, be deranged in such a manner as to produce a separation of the one from the other?

46. Let no one, however, confound that inflammatory diathesis of the blood, which I have been explaining, with actual inflammation. For, it has already been observed, (§ 43.), that the blood does not shew an inflammatory gluten in every inflammation, and not always in the same, especially at the beginning, until it has been generated, or until the red part of the blood, which is more apt to concrete, being intimately combined with the whitish and concrescible part, congeals, before the latter can separate and rise up. And that indeed is evident from the blood itself, which appears coagulated into a firm tenacious mass, and almost free from serum. But, as the disease advances, and room is given to the blood by venesection, or, in consequence of the heat being increased,

the blood becomes so thin, that as soon as it is drawn, it congeals more slowly, and in the mean time permits the concrescible and fibrous part to be separated from it ; which last, from its levity, rises to the surface, floats there, and at length is coagulated into a crust more or less resembling tanned leather *. But still the whole of this concrescible matter does not rise to the top, and congeal there ;

* No one can deny that this fibrous and whitish part of the blood, of which the inflammatory crust is composed, is lighter than the red crassamentum. But from the circumstance of its congealing more slowly than the blood itself, and being specifically lighter, several of the present day agree in opinion with Hewson, that the inflammatory diathesis, which is principally dependent upon it, proceeds from the lymph being greatly attenuated, and, on that account, more slowly inspissated : (Calis. Instit. Chirurg. Med. § CC.); and that it is proven by experience, that *diminished concrescibility of the blood* is the effect of true inflammation. But this can scarce be reconciled with the hard and firm texture of the red blood taken from a vein, and with its concreting, and the more tenacious coherence of the inflammatory crust, which we generally observe in real inflammations. For, if their reasoning were just, as they insist, it would follow, that oil, which is lighter both than wine and water, would surpass both wine and water in fineness, and would be slower of congealing ; which is by no means the case. If, in like manner, difficult congelation were a proof of levity and rarity, nothing could be more rare and lighter than quicksilver, which is very difficultly congelable ; though after gold and platina, it is the heaviest of all substances. Wherefore, greater or lesser tendency to congelation, seems to be derived, not from greater or lesser weight, fineness or density, but from greater or lesser reciprocal attraction of parts.

but such is the abundance of it, that some portion remains in the blood, by which its globules are kept together *, and firmly blended. So much for the inflammatory diathesis of the blood. For I think it ought to be distinguished from the inflammatory diathesis properly so denominated, which extends not only to the fluids, but also to

* I beg pardon of Turrius and Hewson, for employing the old name of the *globules* of the blood. For the assertions of them both concerning their figure do not seem to me so conclusive as to banish the doctrine already received and confirmed of late by the experiments of our countrymen. Caldani, whose authority I greatly value, being asked his opinion by me concerning this subject, informed me, that after repeated experiments he had discovered, that the red particles of the blood were either of a truly globular figure, or, if they are not so, that no reliance can be placed on microscopical observations. But how far microscopical observations are distant from the truth, and how much deception optical appearances of this kind occasion, had been already well known to Senac, who moreover has shewn (*Della strutt. del cuore. T. 2. Supplim. all'Istoria del cuore, c. viii. § vii. and viii.*) in how many ways microscopes change the figure of the globules, at one time representing a hole in the middle, at another a convexity, while at the same time he clearly points out that these were merely optical deceptions. Nor does the opinion of Haller at all differ from that of Caldani; for at the end of his work *De Part. Corp. Hum. Præcip. Fab. et Funct. T. 3. p. 97.* he thus concludes on this subject: "*Legi et cum ea fide quam clar. viris (Turrio et Hewsonio) debemus. Neque tamen possum de mea sententia discedere, qui numerosissima ejusdem semper eventus experimenta fecerim, et consentientes viros peritissimos habeam, Fontanam, Spallanzanum, Cæfareum Pozzi.*"

the solids. I, therefore, think in fact that it cannot exist, unless, with the inflammatory state of the blood, increased force and quickened motion of the solids be conjoined. But let us now return to inflammation itself, from which we have somewhat digressed.

47. From the full explanation of inflammation, which has already been given, every one will perceive when inflammation is occasioned by obstruction of the small vessels which convey the blood, or even a finer fluid, as are supposed every where to exist, or by its oozing or being effused into the cellular texture; and when such obstruction is the effect of inflammation. For simple obstruction, as we have already shewn, is by no means capable of producing inflammation. Otherwise obstructed viscera, tight bandages, thrombi, or small tumors at the orifice of arteries in an amputated limb, as they obstruct the vessels, would resemble the nature and effects of inflammation. Therefore an obstructing matter occasions the cause of inflammation only when it proves injurious by its acrimony, or acquires acrimony by continuing long, and thus acts by stimulating. But if any other stimulus has occasioned the inflammation, then the subsequent obstruction of the vessels, or effusion and congestion of blood, must be considered as an effect. Thus also effusion of the blood into the spaces of the cellular

membrane produces only echymosis, discolouration, vibices, scorbutic maculæ, and perhaps those of a more malignant kind. But if it acquires acrimony by stagnation, the part first undergoes inflammation, and afterwards suppuration. Hence it is easily conjectured, when lentor of the blood, or contracted diameter of the canals, gives rise to inflammation, and when to obstruction. The presence of a stimulus occasions the former, its absence the latter.

48. Assuming, therefore, as the proximate cause of the more copious and violent flow of blood into a particular part, irritation, (§ 34. 35. 36.), its remote causes remain to be enumerated; and first, those which in a certain measure prepare the way for inflammation, and, on that account, are called *πρεσβυπνοί* (*predisposing*). These are the sanguineous and bilious temperament; youth and middle age; plethora; the blood abounding with the concrescible and fibrous part, (as it is called), powerfully digested, compressed, and prepared, by the vital and muscular force, and scantily provided with the aqueous part; either verging on acrimony, or already rendered acid; excess of the inflammable principle; many kinds of acrimony; strength and firmness of the solids; increased elasticity; great irritability or sensibility; likewise particular local debility or laxity, or any other thing predisposing to congestion;

rich, sumptuous living ; a cold, dry climate, exposed to the northern blast. To these some add too thin and not sufficiently coherent blood ; but, unless it proceeds from some particular acrimony, and therefore occasions irritation in any part, I do not see how, from mere tenuity, the blood should be considered as predisposed to inflammation.

49. In the next place come to be enumerated the causes called *προκαταρτηναι* or occasional. Among these are reckoned * sudden cold, especially succeeding heat, or sudden heat succeeding intense cold ; cold drink taken into the body while warm, or cold bathing ; violent motion, as in running or dancing ; the immoderate use of fermented liquors, and of heating and acrid substances ; the suppression of usual evacuations ; ardent fever ; certain states of the air and season, especially when the cold north wind prevails ; miasmata ; poisons ; an ill-timed or immoderate employment of drugs ; excruciating or long-continued pains ; painful bindings ; contusions ; fractures ; luxations ; wounds ; punctures ; the re-

* By means of cold, the fibrous, or concrescible, part of the blood may be coagulated, and when congealed adhere and stagnate, especially when the vessels are constricted with cold. Likewise the mucous part of the lymph congeals by cold and standing, which, however, differs from the former in this, that it may be condensed and concrete even with much less heat.

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tenfion, abforption or application, of acrid fubftances.

50. But the proper feat of inflammation feems to be any part to which an appulfe of the red blood is not required. Therefore, the fmall red arteries, and the ftill fmallervelfels, or fuch as are capable of admitting only one globule, and on that account are pellucid or yellowifh, but when relaxed, or violently preffed, become capable of admitting a greater number of thefe globules, and the cellular membrane throughout its whole extent, into the fpaces of which the blood may be effufed through the relaxed mouths and pores of the velfels, are chiefly liable to inflammation *. But there are fome who will have it

* In the velfels alfo carrying the ferous and lymphatic fluid, it is the opinion of certain writers, that thofe inflammations, commonly called ferous and lymphatic, may arife. But it is founded on the falfe doctrine of the decreafing feries of velfels and red globules; nor will the phenomena of inflammation ever take place in thefe velfels, unlefs the blood-velfels are affected alfo. But, it may be answered, the fmalleft arterious velfels cannot be the feat of inflammation, becaufe, as we are informed by Haller, it has not been fufficiently proved, that the very fmalleft arteries poffefs a fyftole and diaftole. In thefe, therefore, ftimulant power cannot have place. But, when we fay, that the motion of the arteries muft be excited by a ftimulus, to produce inflammation, it muft be underftood of fuch arteries as are not without the fyftole and diaftole, although it be probable that even the fmalleft arteries are not deftitute of it, though it is not very manifef, becaufe no one will deny,

that the veins are liable to the same complaint, at least of the secondary kind *. Nor would I look upon it as altogether absurd, to suppose that the veins are not void of a certain kind of irritability, as some imagine. But, if it ever occurs any where, it is probable that it does so in the *vena portarum*, which performs the part of an artery. The arguments, however, which are adduced by some from the hemorrhoidal tumors swelling, inflaming, and terminating in abscess, scarcely prove any thing with regard to venous inflammation. For who does not see that then also the minute arteries in the coats of the veins, and surrounding parts, and that the cellular membrane, are in a state of inflammation? But, it will be said, that anatomical dissections prove the very frequent occurrence of such inflammation. For often in dead bodies, the intestines, especially the small ones, the mesentery, the lungs, the liver, and the brain, are found as it were painted and overspread with superficial veins, quite turgid with blood. This then

that, in an inflamed part, when they undergo the action of a stimulus, there is an uneasy throbbing in them. Tissot also (De Nerv. T. 1. p. 2. Art. 6. § 266.) shews that they are irritable, and provided with muscular fibres.

* Platner. (Ernest.) Suppl. in I. Zach. Platneri Instit. Suppl. l. c. 2. p. 25. Among those who believe the veins to be irritable, Verschuius is quoted by La Roche, Anal. des Fonct. du Syst. Nerv. Prefac. p. 13. du T. 1.

affords an instance of those venous inflammations, which, since they manifest no symptom of their presence in the living body, or at least usually do not, are therefore denominated by the illustrious Walter, *clandestinae*. I must confess, that such appearance of venous plethora very frequently occurs in the bodies of those who have been cut off by malignant and putrid diseases; but the celebrated Ludwig *, convinced by repeated and very accurate observation, denies that these are real inflammations. For he knew to a certainty, that they ought to be held as effects of dissolution of the blood, and a deficiency of the vital powers, causing a languid propulsion of the blood *a tergo*, which being almost wholly collected in the veins, fills and renders them somewhat tumid. This opinion is chiefly favoured, 1. By the laxity and dilatation of the veins which are incapable of emptying themselves; 2. By the blood in them being very fluid, thin, concreting either not at all, or at least, very slowly; 3. By the period at which such venous congestions happen, namely, at the height of a malignant and putrid complaint, immediately previous to death; 4. By the small weak pulse discoverable in these complaints; 5. By there being no pain, nor other phenomena

* Advers. Med. Prac. V. i. P. i. Art. vii. p. 178. et seq.

of inflammation; 6. and lastly, By the injury which blood-letting occasions.

51. To those congestions, which ought perhaps to be reckoned only venous, belong most of the inflammations which are said to happen about the end of acute fevers of a malignant nature, and which, as has been said, are usually found, on inspection, about the viscera. For it is a well-known fact how much the death of patients has been accelerated by those who, deceived with the appearance of such false inflammations on dissection, to guard against or remove them, in malignant and putrid diseases of that kind, have not hesitated to employ copious and repeated bleeding. Experienced physicians are well aware of this, and continually caution the young practitioner against so pernicious a profusion of blood. Quesnay also, who has very frequently taken notice of such congestions in malignant disorders, is of opinion, that they are by no means to be considered as inflammations; because they did not seem to him referable to the arteries, but the veins. For he thinks, that the vessels appear turgid, and full of blood, not in consequence of inflammation, but of spasm and contraction of the coats of the veins, (which principally happens in malignant complaints), by which all the other vessels become incapable of emptying themselves, and, therefore, on account of the retention and accu-

mulation of the blood, necessarily swell *. Howsoever this phenomenon is to be explained, whether according to Ludwig's opinion, (which seems the more probable), or that of Quesnay, (which is also sometimes plausible); it is well ascertained by experience, that, in both cases, blood-letting is found to be hurtful. For, by this operation, either the putrid dissolution of the blood is promoted, and the vital powers are more and more weakened; or the spasmodic affections of the vessels, by diminishing the quantity of resisting blood, and the propelling power of the heart, are consequently increased. In fact, after blood-letting, I myself have frequently seen the patient's case greatly aggravated; nay, even delirium and convulsive motions, (to prevent which blood had been drawn), immediately have come on. And, I am somewhat disposed to believe, that, by means of venesection, the blood is attenuated and dissolved in such a manner, that penetrating deeper into the vessels of the brain, and perhaps the serous ones, (if there are any such), and pressing upon or forcing asunder the medullary fibres, it not a little accelerates, or induces delirium, sopor, or convulsions.

52. As every disease has its varieties, so has inflammation. The first variety proceeds from the

* *Traité de fièvres*, T. 2. c. vii. Art. ii. p. 444. 445. et seq.

diversity of the parts affected. Hence it is properly distinguished into *internal* and *external*. External inflammation is easily distinguished by the characteristics already laid down ; but the internal is somewhat obscure. The most unequivocal marks of it, however, are heat and acute pain, and throbbing almost entirely confined to the same spot, not a little deranging the function of the part, violent fever accompanied with hard pulse, and likewise the blood drawn from a vein by rest and cold congealing into an unusually firm mass, very consistent, and scantily surrounded with serum, covered with the crust, which has been particularly mentioned above, of a whitish, sometimes yellowish, often of a reddish-white, colour, very tenacious and firm, resembling congealed tallow, or tanned leather. But these symptoms neither happen always, nor do they occur in combination, so as to enable us immediately to detect the presence of inflammation. Therefore great experience and prudence are requisite, that the disguised and obscure nature of inflammation may not beget too much confidence in the physician, or surprise him while he is not even suspecting the presence of the complaint. For, sometimes it comes on imperceptibly and proceeds slowly ; nor does it excite any, or at least very slight fever, nor is it accompanied with the acute and throbbing pain, which we have already pointed

out, or if there is any at all, it is usually very obscure. But physicians of uncommon skill assure us, that there is at that time felt in the part, instead of an acute pain, a certain anxiety, or the sense of a certain kind of uneasiness, or weight; or that unusual tension resists the touch of the finger, and that excruciating pain is excited by pressure upon it. This happens, in a particular manner, in malignant peripneumonies, which, on account of sudden gangrene coming on, are called by some moderns *gangrenous*, or in those arising from metastasis, or succeeding putrid and pestilential diseases; likewise in some genuine inflammations of the stomach, intestines, and mesentery, unconnected with venous congestions; if, however, anatomists are to be believed, one has often been mistaken for the other. Moreover, in inflammations of parts, which have either lost their sensibility, or are naturally altogether void of sense, or are endowed with an obtuse kind of it only, such as the peritoneum, pleura, mediastinum, pericardium, dura and pia mater, tendons, cartilages, and other such parts, the pain is either absent, or obscure and slight, unless they are so swelled at the same time that the more sensible parts in the neighbourhood are pressed upon, or sympathise with them, or the parts, through which nerves pass, are particularly affected with inflammation.

53. Frequently the pulse in these inflammations is neither hard nor violent, for many reasons; but especially when the part affected opposes much obstruction to the passage of the blood, as the lungs, heart, or liver; or when the nervous system is affected in such a manner, that the heart and arteries are as it were blocked up with the most violent spasm; or, from a resolution of their strength, become torpid. In which last case the small and variable pulse, fever, and other symptoms, seem to be very different from those of an inflammatory kind.

54. Inflammation also, like most other diseases, is divided into *benign* and *malignant*, *spasmodic* and *epidemic*. The *benign* kind is that which is accompanied with the usual and peculiar symptoms, does not waste the strength, nor, under the appearance of a milder disease, secretly endanger the patient's life. The *malignant*, on the contrary, is that which puts on the appearance of the other, is attended with remarkable prostration of strength, does not exhibit all the marks of inflammation, and, for the most part, depends on a poison for its cause, or is cherished by a putrid diathesis of the fluids *. The *sporadic* kind

* A very recent author observes, that the malignant kind may be recognised: "Si causa ignota, stimulus validus, non tollendus, ignotus; si post multas venesectiones sanguis semper pleuriticus; pulsus semper durus fit; si inflammatio viscus

attacks but few at the same time, and arises and continues to rage, for the most part, from secret and particular causes. Lastly, the *epidemic* kind attacks many at the same time, arises from a general cause, or depends on vicissitudes of the weather, a peculiar vitiated state of the atmosphere, or bad kind of meat and drink.

55. There is likewise one of a *primary*, another of a *secondary*, kind. The former attacks a person, otherwise in sound health, and is derived from no other disease; the latter supervenes on some other disease, catarrh for instance, rheumatism, colic pains, dysentery, or the like. But if it be as it were a symptom of another disease, of a luxation, for instance, of a wound, of continued or intermittent fever, &c. it is with more propriety termed *symptomatic*. Some likewise divide it, like other genera of diseases, into *idiopathic* and *sympathic*. The cause of the former is entirely situate in the part where the inflammation appears; that of the latter has its seat elsewhere, and, by consent, inflames a different and remote part. This last is produced * chiefly by irritation of the nerves which are distributed upon

totum vitale occupet; si corpora cacohymica invadat." Jo. Veisf Pyretolog. Prac. p. 9. But I should think that those symptoms rather point out a fatal, than malign and insidious kind of disease.

* Callisen. Instit. Chirurg. § cxcvi.

any part *. Lastly, in respect to the parts affected, it may be denominated either *universal*, or *particular*, according as it obtains over the whole body, or only in a particular part. Next, *particular* inflammation receives various special names, derived from the parts affected, as *cephalitis*, *angina*, *pleuritis*, *peripneumonia*, *carditis*, and so forth. Again, it is either *fixed*, or *wandering*, according as it continues fixed in one spot, or spreads from place to place.

56. Moreover, according to the different degrees of violence of the symptoms, several other differences are established by authors, which, however, seem rather applicable to external and visible inflammations. For if the symptoms be very slight, if the inflamed part be red without being accompanied with much pain, if there be scarcely any tension or tumor in it, and the heat is very inconsiderable ; such an affection ought to be considered as the beginning, or first stage, of inflammation, and is called by most

Phlogosis.

(φλογσις), phlogosis †. But if the heat, redness, pain, tumour, and tension, are

* Veisiz, who is quoted above, rejects such a sympathy by the action of the nerves, and contends, that distant parts are affected by metastasis. But, I fear, his affirmation is inconsiderate and rash.

† From φλεγω, to burn.

present in a higher degree, it is then properly called true inflammation, or phlegmone, Phlegmone. (φλεγμονή), and answers to the second stage of the complaint. Surgeons apply that name, by way of eminence, to any particular inflammation, in which the part is elevated into a circumscribed and round tumour, which is not only of a fiery redness, and extends even to the adipose membrane, but also has its seat in it, and is accompanied with violent pain and a most uneasy sensation of throbbing.

57. But when the inflamed part is enormously swelled, and a collection of blood seems extravasated in the spaces of the neighbouring parts, from the violence of the inflammation, such state is esteemed as the third stage of inflammation, and is universally called *inflammatio sytrophica*. Lastly, a rapid propensity of inflammation to gangrene, to which some kinds are much more prone than others, is the reason of a gangrenous inflammation having been adopted by authors, which constitutes the fourth and last stage.

58. It likewise sometimes happens, that a kind of rosy hue appears on the surface of the skin, which, however, has not the effect of raising it, and causes rather a sense of great heat than pain, and when pressed becomes white, and partly passes from one place to another. This species

has the name of erysipelas (*ερυσίπτελος*) *.

Erysipelas.

Its cause is every where considered as being thin, bilious, and acrid blood †; or, according to others, yellow, vitiated serum, possessing a peculiar acrimony, in a particular place directed to the cutaneous vessels, and affecting the cellular texture of the skin itself. But, according as the inflammation approaches nearest

* From *ερυν* and *πτελος*, or, *ερυθρος*, as involving the neighbouring parts in the complaint, or rendering them red. Gal. def. 1.

† Galen, (Method. Med. l. xiv. c. 2.). After describing phlegmon, as above, proceeds as follows: "Atque hic unus affectus est sanguineæ fluxionis soboles in carnosa corpora maxime incidens. Secundus alter biliosæ fluxionis germen est, ac circa cutem maximè consistens, tum hanc externam, quæ omnium partium commune est tegumentum; tum membranofum et tenuem, quæ singulis internarum est circumdata. Ergo sicuti prior affectus etiam cutis aliquid apprehendit, ita hic quoque aliquid subjectæ sibi carnis occupat. Quod si crassior humor, acriorque sit, summam cuticulam (Græci *ἐπιδερμίδα* vocant), excoriat, spatiumque ad profundum aliquando cutis exulceratio pervenit. Atque hic quidem affectus Erysipelas nuncupetur, duplicem (ut jam dictum est), habens differentiam: quod vel absque exulceratione, vel una cum hac incidat. Prior autem affectus unius rationis est, voceturque phlegmone. Cum ergo nec plane biliosa, nec sanguinea fluxio est, sed ex ambabus mixta: utique ab eo, quod in mistura exsuperat, nomen ipsi indatur, an dicatur de eo id, quod exsuperatur: sic ut vel phlegmonem erysipelatosam id vocemus, vel erysipelas phlegmonosum. Ubi autem neutrum vincit, ibi vitium phlegmones, erysipelatisque medium nominetur.

to the nature of phlegmon, erysipelas, or edema, for distinction's sake, it is called *phlegmonic*, *erysipelalous*, or *edematous*. Some add a *scirrhus* species, but whether rightly or not, I shall not determine; unless that kind of inflammation is meant by the name in consequence of which scirrhus is changed into cancerous ulcer, if that complaint can be so named. Some even go so far as to distinguish internal inflammations, according to the nature of the fluid affected, into *sanguinous*, *serous*, and *lymphatic*, and *others variously modified*. These distinctions, however, are almost fictitious and arbitrary, proceeding from the pre-conceived opinion of such difference, in consequence of which I have observed not a few led from the proper and useful method of cure.

59. Besides, these other distinctions are taken from the length of their duration. For they either run their course very rapidly, or proceed slowly, and are protracted a considerable length of time. The former are called *acute*, or *rapid*, the latter *slow*, or *chronic*. Instances of the latter kind are afforded by tedious inflammations of glandular parts, as of the pancreas, mesentery, breasts, parotid, axillary, and inguinal glands, &c. Chronic inflammations, for the most part, are both produced and kept up, by a bad habit of body, by a scorbutic, scrophulous, or venereal taint, by a disposition to scabies, herpes, and si-

milar cachexies. Lastly, when any of the symptoms of inflammation are deficient, or obscure, they are then called *spurious* inflammations, or simple phlogoses. For well-marked symptoms, or those of a slight kind, readily make themselves manifest to the senses, and determine to a certainty the nature and degree of the inflammation : but the fluid and causes do not afford the same information ; as the former frequently cannot be guessed at with any degree of precision, and the latter for the most part elude our observation.

60. With regard to the prognosis : Upon the whole, inflammation is an acute disease, and, therefore, not slight, but of doubtful termination ; the more dangerous, the greater the number, and the more severe are the symptoms attending it. When it is malignant and succeeds to putrid complaints, or is combined with putrescency of the *primæ viæ*, or occurs in habits with bad-conditioned humours, or those of a scorbutic disposition, and, likewise, when epidemic, it is attended with greater danger, and does not easily admit of a cure. External inflammation is generally more safe, although, when it puts on the form of malignant erysipelas, it sometimes proves quickly fatal. Instances of this kind are to be met with in the works of Hippocrates (Epidem. l. 1.) and many others. But the prognosis in particular inflammations depends upon the variety

of the parts affected, according as functions, more or less necessary to life, are injured. But of these more at length elsewhere.

61. Moreover, inflammations, and inflammatory diseases, sometimes may be foreseen from the nature of the seasons. Some useful observations on this head have been left us by Hilary, in his Work entitled, "*Supplementum ad Tractatum de Variolis*," of which the following is the substance *. A long continuance of dry warm weather gives rise to inflammatory disorders, in which the head is particularly affected. Likewise a continuance of cold dry weather occasions the same disorders, in which the head, but more frequently the bowels, are attacked. But, if the weather be cold and moist, serous congestions, glandular inflammations, peripneumony, and angina, are rather the consequence †. When, however, warm dry weather is succeeded by cold and moisture, inflammatory fevers, attacking especially membranous parts, the larynx, pleura, lungs, stomach, the ligaments, or teguments, of

* *Essays and Observ. de Medicin. d'Edimb. T. vii. p. 95.*

† Last winter, after a cold, damp autumn, the same kind of weather still continuing, and much snow having fallen, cephalitis, violent head-achs, anginas, and erysipelas of the head and face, contrary to what might have been expected from Hilary's observations were frequently to be met with.

the joints, are induced. Hence flow angina's, pleurifies, peripneumonies, inflammations of the stomach, and acute inflammation of the joints. So far of the prognostics of Hilary. But Hippocrates * on the same subject observes: "*Si vero æstas sicca, et aquilonia fiat, autumnus autem pluviosus et austrinus, capitis dolores ad hyemem fiunt, et tusses, et raucedines, et gravidines, quibusdam etiam tabes.*" Nor does he omit these diseases, which happen especially during winter, of which the majority has a tendency to inflammation. For he says, "*Hieme vero pleuritides, peripneumoniæ, lethargi, gravedines, raucedines, tusses, dolores pectorum, laterum, et lumborum, et capitis dolores, vertigines, apoplexiæ †.*"

62. But every inflammation has various terminations. The more common opinion is, that it terminates by resolution, (as it is called), suppuration, gangrene, or scirrhus †. It is said to be

* Aph. I. 3. n. 13. The prognoses in this aphorism are confirmed by this very year's experience.

† Aph. I. 3. n. 26.

‡ Almost all physicians have hitherto taught, that inflammation ends in one or other of these four different ways. But some of the moderns. (Held. Dissertat. Inaugur. med. de tempest. cort. peruv. usu in febrib. inflammat. Gotting. 1775.) think otherwise, and affirm, that from experience it appears,

resolved, when the complaint remits and entirely goes off, without leaving any vestige behind. Suppuration is said to take place, when the inflammation has been so great, that the stagnating, or collected fluid begins to be concocted, and gradually acquires the nature of pus, and either forms an abscess, or is accumulated within the vessels themselves. It terminates in gangrene, when, all vital motion and sensibility of the part becoming extinct, it dies, or is obstructed by a tonic spasm in such a manner that all life is lost. But this last stage is sometimes either the effect of

that it may terminate in six ways; namely, 1. By *benign resolution* of the inflamed blood; 2. By *critical evacuations* of the fluids that are not resolvable; 3. By *metastasis*; 4. By *suppuration*; 5. By *gangrene and sphacelus*; 6. By *induration and scirrhus*. But, the second of these ways may be comprehended with equal propriety under the term resolution. The third is not peculiar to inflammation, but is likewise common to other complaints. Nor is inflammation removed and terminated by change of place. But, if inflammation be terminated by abscess occurring in any part, such a termination is easily reduced under suppuration, or under the effect of suppuration. Others add, (Richter de Duplic. Inflammat. Exitu Desquam. et Rigescent. 1783. Gotting. and Gattenhoff. Differt. Sift. Inflamm. Causas et Eventus. Heidelb. 1765.) desquamation. But this also does not happen in every case of inflammation, but in some only, as in erysipelas, scarlatina, small-pox, &c. In general, therefore, it is not admitted among the peculiar terminations of each inflammation. The desquamation of small-pox, moreover, rather belongs to the consequences of suppuration and exsiccation.

the most violent inflammation, or of what I consider as a more frequent occurrence, a depraved or contaminated state of the fluids. For often, when the fluids are mild and without acrimony, the most violent inflammation does not terminate in gangrene. But, on the other hand, the slightest fever and inconsiderable inflammation pass into gangrene, on account of the pernicious and deleterious cause occasioning it, which wastes the vital powers, deprives the nerves and fibres of sense and motion, or like a caustic quickly burns, destroys, and corrupts the part. Next it terminates in scirrhus, if the part becomes hard in consequence of the impacted matter, neither entirely resolved nor brought to suppuration, almost all sense being lost, as happens chiefly in glandular parts. Of all those terminations, the most salutary is *resolution*. *Suppuration*, unless of an external part, is attended with much danger. Although the termination by scirrhus may save the patient's life, it leaves other tedious sequels, which, unless extirpation be performed, generally prove fatal. Lastly, *gangrene*, if chiefly internal, without doubt occasions death.

63. It may be expected that resolution will take place, if the inflammation be recent and of no great extent ; if the motion of the blood is neither very rapid, nor, in consequence of the power of the heart failing, almost entirely ceases ;

if the body be of a good habit, and provided with well-conditioned fluids, and be neither too dense nor lax ; if malignity, putrid dissolution, and remarkable acrimony, be absent ; lastly, if timely assistance be given. In whatsoever manner, however, the complaint approaches, resolution must be attempted by all means. Wherefore, from the very beginning, it is necessary to lessen the flow of blood to the part inflamed, to check the increased vital motion both there and elsewhere, to blunt, and remove any acrimony present. Hence the first thing to be done, is the letting blood freely, and repeating it as circumstances may require ; namely, as long as the phenomena of the inflammation continue urgent, and a hard and strong pulse indicates crudity and excessive force of the circulation *. Nor may that be

* Some advise the bleeding to be continued until the inflammatory crust entirely disappear. But that is by no means necessary, nay, sometimes not unattended with danger. Frequently the last bleeding exhibits a thicker and more tenacious coat than any former one, and yet the disease is quickly resolved, and it is properly judged that no farther bleeding is requisite. Ballonius (Epid. l. 1. p. 88. et l. 2. p. 225.) used to complain of this pernicious practice of some, saying : “Cum hodie demitur sanguis, et ultimum vas corruptissimo sanguine, (id est crassa inflammatoria, et albida tecto), plenum est, tum incitantur medici ad iteratam, imo tertiam et quartam venesectionem, et quo magis corruptionis particeps sanguis est, eo de secunda vena audacius cogitant, et sic misere in humani generis sanguinem contenditur et statuitur.”

done by venesection only, but also by arteriotomy; for experience teaches us, that, when the nature of the part will permit, the arteries may be opened with advantage. But it is a practice which requires great caution, if the strength is much exhausted; or malignity, or symptoms of corruption, or putrid colluvies of the *primæ viæ*, be present; or if it is forbidden by the peculiar disposition of an epidemic constitution; or if the fluids are in a state of too great poverty; or if the long duration of a preceding disease has reduced the patient's strength. Likewise blood must be drawn sparingly, when the inflammation seems of the *edematous* kind; (§ 58.), or the patient's temperament be phlegmatic, or if he be of too lax solids.

64. But all are not agreed as to the part from whence the blood should be taken; some advising that the veins most remote from the part affected should first be opened, while others give the preference to those that are nearest. By the first means they affirm that the blood is advantageously directed elsewhere; by the other that it is immediately abstracted from the inflamed part, and that the force of the remaining blood to come in the place of what is drawn, is increased, and exerted upon the obstructed vessels, in order to remove their obstruction; for they are of opinion, that such obstruction must always be present in

inflammation. They denominate the former *revulsion*; the latter *derivation*. But it very seldom happens, that venesection next the part affected produces true *derivation*, nor, even though it did, would there in fact be occasion for it, there being, for the most part, as we have by a variety of facts already shewn, no obstruction of the vessels. Therefore, at the height of inflammation, we ought always to have recourse to revulsion, that the violent collection of blood, on which inflammation seems to depend, may be diminished, by, in some measure, averting the blood to another quarter. But Placentini * has very clearly demonstrated by means of arguments, principally taken from anatomy, and also the immortal Haller † by innumerable experiments made on living animals, that greater revulsion is obtained, the nearer to the part affected the veins are opened, than if they were remotely situated, provided they be not continuous with the arteries, in which the inflammation has its seat. Hence the belief of the distinguished utility which the principal physicians have ascribed to blood-letting from veins situate nearest the part affected. But when the disease is

* Differt. de ven. quæ in morb. partic. corp. sit salutaris incidenda. proposit. 6. et seq.

† Mémoire sur le mouvement du sang, et sur les effets de la saignée. sect. vii.

attended with very great plethora, and has not made much progress, it appears to me to be the safest plan, to attempt revulsion gradually, first opening the more distant veins, next such as are nearer, that the superabundant blood may not suddenly rush to the part affected, in consequence of its force being directed to the neighbourhood. Moreover, the larger the veins are, and the greater the opening is, revulsion will more certainly and readily take place, as is proven by repeated, nay, by daily observations.

65. But although we assign the first place to revulsion, and are of opinion that it is best effected by the letting of blood nearest the part affected; still I by no means conclude, that all derivation is impracticable, or always unnecessary. For though, on diminishing the quantity of blood, and directing its force to another quarter, the effects of inflammation nevertheless continue, why should we not attempt derivation, that the blood which is effused, or which by an *error loci* has passed out of its proper channel, may be recalled to its proper vessels, or when accumulated and stagnating may be removed from the part? But if no veins *immediately continuous* (as they say) with the arteries, in which the inflammation is seated, open externally; in order to cut them, for bringing about derivation, there is no other method than scarification of the inflamed part it-

self, if it lies open to the hand, or the application of leeches, by which the vessels may be immediately relieved and subside, become relaxed, and the circulation of the fluids, which seemed to have been suspended, may thus be renewed. I recollect of scarification having very frequently been employed with the greatest advantage in advanced inflammations of the tonsils, of the uvula, fauces, palate, tongue, palpebræ, tunica conjunctiva of the eyes, and intercostal muscles; and leeches have been of service, when either the nature of the part, or the fear or dislike of the patient, prevented the operation of scarification.

66. Besides revulsion, on which is placed the chief reliance in the cure of inflammation, blood-letting also affords relief in removing some part of the cause producing inflammation, viz. the acrid and irritating principle, and in diminishing the quantity of blood, by which room is made in the greater vessels, the pressure and attrition are lessened*, the heat is moderated, the vessels are relaxed, their elastic power is restored, their irritability and sensibility obtunded, the blood becomes more rare and fine, proceeds more directly

* That heat is diminished by bleeding, however that happens, was proven in the year 1765, by Anton. Martin, who instituted a set of experiments for the purpose of ascertaining the point. V. Acta Acad. Reg. Scient. Suecic. an. 1767. vol. 28. p. 165. Also Comment. Lips. v. 16. p. 397.

forward, diverges less, the secretions and excretions are performed better ; all of which circumstances contribute very much to discuss and resolve inflammation.

67. Mild laxatives also produce a kind of revulsion ; but they ought to be of a bland nature, and such as act upon and dissolve the fluids, gently draw them to the intestines, and cause their expulsion. For which reason, practitioners recommend subacid and refrigerant substances, which neither agitate the blood, nor irritate the solids, nor increase motion, but rather check and allay heat : of this kind are tamarinds, whey, cream of tartar, cassia, manna, and the like. Clysters composed of those things which are emollient, gentle, and laxative, come under the same head. For these are always considered as perfectly safe, provided they be free from warm acrimony, and the power of irritating. If it be necessary to conjoin any stimulus with them, honey, nitre, or cassia will be sufficient. Therefore, true, acrid, and powerful cathartics and emetics ought to be avoided as hurtful ; and, if it ever happens, that a peculiar epidemic constitution, in which a putrid or poisonous miasma has fallen upon the *primæ viæ*, or the cause, by which the disease is kept up, arises from corrupted or superabundant bile, or from any depravation of the fluids, and requires vomiting, that it may be excited by mild

and gentle medicines, after the plethoric state of the vessels has been removed by venesection. But we must cautiously refrain from all these kinds of revulsion, if the stomach, or the intestines, or the neighbouring viscera which communicate with them, be affected with violent inflammation. For, if purging is then indicated, it is better to attempt it by means of clysters alone, or warm water, or oil, or simple whey, or some such like very gentle remedy. For it then appears, that the kind of revulsion, which would be apt to produce an opposite effect, cannot by any means be safely employed.

68. The indication of revulsion is in like manner promoted by warm bathing of the hands and feet, by the application of warm fomentations, which are singularly efficacious in mollifying and relaxing the fibres that are too rigid, or contracted with spasm, or excessively irritable, and which moreover render them less susceptible of the action of stimuli, and, by enlarging the spaces of the vessels, direct the course and quantity of the blood elsewhere. It is likewise well attested by experience, which, as in other things, is certainly the best guide also in medicine, that various kinds of epispastics, according as the disease is situate in different parts, when applied externally to parts in due time, sometimes to those which are distant, at other times to those which are near-

est, draw off and abstract the morbid humour elsewhere. The chief of these are cantharides, euphorbium, mustard-seed sprinkled on fermented bread, and prepared with vinegar and spirits of wine, or otherwise reduced to the form of a cataplasm, plaster, cerat, or ointment. These also introduce something into the blood, but especially the cantharides, to rouse the languid action of the nerves and fibres, and remove, dissolve, or cut off the too great propensity of the fluids to coagulate, or to obviate their lentor, if any such thing really takes place *. But, since they effect that

* One can scarce withhold his laughter, when some of the moderns, trusting to one or two fallacious experiments, do not hesitate to pronounce, That the effect of cantharides is to condense, not to dissolve the blood and other fluids. Let them repeat their experiments with the caution and attention becoming men who are studious of acquiring real information, and, I hope, if they do not chuse to remain hood-winked, that they will readily detect their blunder, and carefully avoid falling into it again. Whoever wishes for a most ample account of the nature, powers, and use of cantharides, may peruse a book entitled, *Disquisitio medica cantharidum historiam naturalem, chemicam, et medicam exhibens, auctore Rudolph Forsten, M. D. Argentorati 1776*. But for a particular account of their use in inflammations and acute diseases, may be consulted, *Commentatio de Ufu Vesicantium in Febris Acutis, et speciatim in sananda pleuritide accuratius determinando, Auctore B. L. Tralles. Uratisslavæ 1778*. To these may be added the two following Dissertations: 1. *Caroli Christian. engel. de explicandis generalibus vesicanti-*

by some acrid and volatile principle, their use should be guarded against, when the solids are in a state of too great dryness and rigidity, or the sensibility of the nerves is too acute, or the vessels are still too turgid, or the motion of the fluids is too rapid, or heat, thirst, wakefulness, or spasms are urgent symptoms, or deep-coloured urine, or an alkalescent thinness of the blood dissuade their employment.

69. Moreover, in order to allay any increased vital motion, and to moderate, remove, and eject

um effectibus, eorumque speciali in inflammationibus usu. Halæ. d. 11. Nov. 1774. It is to be found in Baldinger's Sylloge Selectior. Opusc. v. iv. p. 126. 2. Jo. Carfan de Cantharidum historia, operatione et usu. Edinburgi, 1776; which is to be found in the work just now quoted, v. iv. p. 180. The author, who is a follower of Cullen, supposes that cantharides act by their stimulating, evacuating, and antispasmodic power. Whatever may be said of his opinions, he contends with sufficient erudition about the limitation of the use of blisters in inflammatory synochus; in typhus, slow fever, in putrid fever, in small-pox, apoplexy, palsy, &c. It may not be improper likewise to consult Dissertat. de tuto, et eximio vesicatoriorum usu in acutis, Præsid. cl. Vogel, Auçt. J. H. Struve, Götting. 1768. But, the parts to which blisters may be most properly applied are very judiciously pointed out by Theod. Cerh. Timmerman, and Guil. Lud. Hoelcke, in Dissertat. de Vesicantium Locis. Rintel. 1771. in which the application of blisters to an affected part is asserted to be of more ancient date than is commonly believed. This dissertation is likewise to be found in Sylloge Baldingeri. v. 1. p. 326.

from the body any kind of stimulus and acrimony, water, in a particular manner, must be given in abundance. It possesses peculiar efficacy in diluting the fluids, in diminishing heat, motion, and attrition; it blunts the irritability, it weakens acrimony, dissolves the thick and dense parts of the humours, promotes the secretions and excretions; in one word, after blood-letting, almost it alone performs and completes the cure. When the blood is too warm, and is disposed to become rarified; when the patient is young, and of the choleric temperament, when the climate is warm, and it is the summer-season; or an erysipelatous tenuity of the fluids is discoverable; cold water is preferable. But when relaxation, softening, and solution are required, or sweating or expectoration are to be excited, warm, or at least lukewarm water has been found more proper. It is customary to add to the watery drink, substances of an acedcent, acid, saponaceous, refrigerant, farinaceous, or sweet kind, that it may the more readily be blended with the blood and other fluids, especially the oily and fatty ones, that it may be more apt to weaken the irritability of the heart, attract the igneous principle, check its evolution, oppose the alkalescence arising, as is said, from excessive motion and attrition, and restrain the dissolution depending on that cause, or meliorate the phlogistic diathesis of the blood, whether

it does so by promoting the admixture of the con-
crescible and fibrous, with the red part, or by di-
minishing and attenuating its quantity and len-
tor.

70. Hence water, agreeably prepared with ci-
tron, lemon or orange juice, with the addition of
a little sugar or honey, is recommended ; or that
which is slightly tinctured with vinegar or acid
spirits ; or decoctions of wheaten bread, barley,
oats, subacid fruits, or refrigerant herbs, grafs, fuc-
cory, sow-thistle, borage, goat's beard, or endive ;
likewise emulsions made from the cold seeds, as
they are called. To which may be now and then
sparingly and cautiously added, according to cir-
cumstances, nitre, oxymel, infusions of elder-ber-
ries, currants, barberry, raspberries, and similar
fruits. If these are not sufficient, and the slug-
gish and tenacious fluid still abounds, and the
power of the heart must be roused to overcome
and extirpate the disease completely, then also
camphor, kermes mineral, Virginian snake-root,
the stems of dulcamara, herba genipi, or grayish
Alpine worm-wood, with camomile flowers, and
other remedies of a similar kind, are called to aid.
But these ought not to be used indiscriminately,
since their employment requires a judicious prac-
titioner, who carefully keeps in view the laws and
precepts of therapeutics.

71. Sometimes, however, the pain rages with

such violence, that a distension of the nerves may be feared to ensue. Then it ought to be alleviated by anodynes and preparations of opium, whatever may be the opinion of them who employ such remedies inconsiderately, or at an improper time. Moreover, applications to the part affected should occasionally be made, sometimes of those things which soften, at others of those which gently repress; sometimes of such remedies as moisten; at others of such as mildly dry and discuss; according as the tension and pain, or heat and laxity, or dryness, or humidity and serous collection, seem to require. For the most part in the beginning, and at the end of the complaint, repressing and strengthening remedies, unless the nature of the disease, and experience, require some other treatment, are usually employed.

72. It is by such means, therefore, we attempt resolution; but, in the timely administration of each, the utmost care is requisite to keep within the proper bounds of moderation. In particular, the motions of nature must be regulated in such a manner, that both those which seem excessive, and such as seem deficient, may be restored to the golden mean, so much recommended by Sydenham, and which is necessary to bring a disease to a happy termination. The vital powers, therefore, ought not to be so prodigally lavished, nor ought the heat to be extinguished in such a man-

ner, as to be rendered incapable of overcoming the disease, and concocting the pus. For a certain degree of force of the solids, and a moderate degree of heat, are requisite to subdue the irritating cause, that the phlogistic diathesis, or effused and stagnant humours, which perhaps could not be dissolved, may undergo the purulent concoction, or pepasmus, and may be expelled by expectoration, urine, or sweating; or may be transferred to other parts, per *metastasis*, (by metastasis), and terminate the complaint successively.

73. That takes place particularly in the fever which Gorter has styled *ardent*, but others *inflammatory*, in which no part in particular, but almost the whole system is affected. For the inflammatory diathesis of the blood is so changed by *concoction*, that it often at first resembles the appearance of the urine, and passes off with it, falling to the bottom in the form of a white, laudable, critical, sediment *. Whilst this goes on, rest both of mind and body, very slight diet; and the frequent renewal of pure and temperate air †, should

* Gorter, Dissert. de Siti. § 32.

† Unless the air of the bed-chamber be renewed, as it ought, it is so corrupted by the effluvia of the body of the patient and bystanders, that it becomes equally incapable of supporting respiration and perspiration. Surcharged with phlogiston and other exhalations and vapours, it grows warm and fetid, and does not call forth, but checks the perspirable matter, again

be enjoined. And if ever the strength be brought down by immoderate evacuations, or by the accession of a putrid diaphoresis, cardiacs, antiseptics, and especially wine, have been found to prove of wonderful efficacy. For it often happens, that, in consequence of the force of a violent fever being long kept up, and excessive heat arising from that cause, the blood and other fluids acquire an alkalescent nature, and sometimes pass on to a putrid dissolution. Which, when it does happen, (although it happens much seldomer than is commonly believed), the disposition of the complaint being altered, requires more powerful antiseptics, especially the fossil acids.

74- It must, however, be observed, that, not unfrequently, after the digestion of pus, the separation and excretion of the morbid matter is retarded. When this happens, the generality of practitioners endeavour to promote it by gentle cathartics; nay, when they suspect that the complaint has not been sufficiently resolved, they have recourse to such remedies to prevent its relapse. And these same, or not dissimilar, remedies are

throws noxious effluvia into the body, makes the patient anxious and asthmatic, injures the nerves and muscular power, favours putrefaction, &c. Such is now called phlogisticated air, (azotic gas). Animals confined in it are suffocated by their own exhalations.

adapted to erysipelas, especially of the phlegmonic kind. But, in pure erysipelas, the blood should be drawn more sparingly and slowly than in the phlegmonic kind: for, unless it has attacked the head, it is easily discoloured, as it were, of itself, within a few days, and disappears. Likewise, less blood should be drawn in edematous erysipelas; nay, it often does not require any at all being let. Erysipelas rather requires antiphlogistic and subacid purgatives, which, when the disease takes a favourable turn, are in a manner necessary. They should not, however, be prematurely employed; for often, in consequence of purging, erysipelas is driven inwards, not without great danger to life.

75. But if the inflammation obstinately resists the efforts both of nature and art, and yet does not prove fatal to the part, but rather continues some time in a doubtful state, and then seems to remit, whilst at the same time the pain abates, and the fever, with unequal accession* and tri-

* Hippocrates has very judiciously observed: "*Circa puris generationes, (or, as others construe it, dum pus conficitur,) dolores et febres magis accedunt, quam confecto.*" Aphor. 47. sect. 2. But this is not uniformly the case. Nor is it always the case that suppuration is attended with shivering: For it sometimes happens without any of these symptoms. De Haën (Rat. Med. p. 2. c. 2.) deserves to be consulted on the generation of pus.

gore, assumes a new kind of course, and the redness and tension visibly in some measure decrease, it is a proof that the inflammation has already suppurated. Upon which the motions of nature must be prudently regulated, that is to say, must neither be pushed too far, nor too much checked. In general, those remedies which soften and derive to the surface, and prevent putrefaction, are esteemed the safest.

76. When pus manifestly shews itself externally by gentle fluctuation, if the complaint be of a suspicious or poisonous nature, although it has not arrived at perfect maturity, an outlet should be given it by making a speedy and sufficiently deep incision. On the other hand, if it be of a benign kind, and the part in which the pus is concocted consents with others, its maturation must be awaited, before the abscess is opened. But when suppuration happens internally, and an incision cannot be safely performed in the part, the pus should be carefully directed, as far as that can be done, to other passages by which it may be let off, always employing antiseptics to prevent a purulent vitiation of the fluids. Even then, however, its terminating favourably is an uncommon occurrence.

77. But if, from the pain's disappearing, the smallness and inequality of the pulse, the phleg-

mon turning pale, livid, or black, weakness of the system, coldness of the extremities, a squalid and lead-coloured appearance of the countenance, and slight mental derangement, it is judged that the disease is approaching to gangrene, we must fly to cardiacs, and antiseptics of the most powerful kind; above all, Peruvian bark, camphor, Virginian snake-root, arnica, scordium, camomile flowers, and other such things; not omitting the assistance to be derived from surgery, if the nature of the part affected admits of it.

78. Lastly, if the inflammation terminates in scirrhus, which is easily detected by the touch, or is discoverable by the functions not returning to their healthy state, although matters may have come to the utmost extremity, nevertheless, that we may not give up our patient for lost, though he cannot always be preserved, it will not be amiss to attempt the cure, by the mildest and most efficacious solvents, viz. soap, hemlock, the fetid gums, nay, by mercury itself. But it is the safest plan, before having recourse to the most violent remedies, to intrust the cure to time and nature, to try cow-whey, the juices of mild and resolving plants, the hot-bath, change of air, and gentle exercise. Such are the observations which it seemed

necessary to premise in a general way, concerning the nature, differences, termination, and cure of inflammation. What relates to each particular inflammation, shall be delivered in its proper place.

G 3

OF

FEVER IN GENERAL.

1. **S**OME derive *febris*, the Latin name of fever, from *ferbeo*, or *ferveo*, others from *februo*, to purify. Derivation of the name. It is a matter of indifference to me from which of them the word receives its origin. For, in most fevers, especially when they are pretty far advanced, and have attained their acme, the blood and the whole body become warm ; and, on the other hand, fever frequently seems to be excited for the purpose of purifying many vitiations of the blood and other fluids. For sometimes such diseases as are not cured by the application of remedies used in medicine, are removed by fever *. Hence it is not without good reason that Hippocrates, Galen, Celsus, and not a few others, have not only considered it as desirable that it should supervene on

* Such are apoplexies, palsies, epilepsies, convulsions, arthritic complaints, obstructions, &c.

some diseases, but have even given it as their opinion, that it ought sometimes to be purposely excited. For, by means of it they suppose, that the impure, crude, superfluous, or stagnant fluids, are corrected, attenuated, and concocted, put in motion and excreted. Hence most writers have been so lavish in their encomiums of the salubrity of fevers, that they have even exceeded the bounds of truth ; in consequence of which, Werlholff was led to consider himself as bound to check such unqualified praise, which he has done in his learned and useful work, *De limitandis febris laudibus*.

A disease of very frequent occurrence.

2. Fever is a disease of such frequent occurrence, that, according to Gorter *, one third, but, as Sydenham † affirms, two-thirds of the diseases to which mankind is liable, may be referred to it. Therefore, its being a very common opinion among physicians, that more than one half of mankind are cut off by it, ought not to be matter of wonder ‡.

* Comp. Med. Tract. 52. § 1.

† Dissert. Epist. oper. omn. p. 444. et epist. responsor. 1. p. 362.

‡ Buchan's Domestic Medicine.

Extent of the term Fever

3. But there are so many different kinds of diseases, to which the name of fever has been applied, and such is the

difference between their causes and symptoms, that the most philosophical and experienced physicians have despaired of being able to give an unexceptionable definition of the complaint. "For in one kind of fevers," says Gorter * just now quoted, "the appearance of certain symptoms denotes the presence of fever, whilst in others these are altogether wanting."

* L. c. § 2.

4. That this may be the more readily comprehended, it is necessary to Galen's definition of fever. adduce here only a few of the most noted definitions of fever out of the vast number contained in the works of authors. Galen *, in his first book, "De differentis febrium," has defined fever *preternatural heat*. But neither is such excessive heat present in every fever, nor, when it is, at every period of it : for in those which Torti denominates *algidæ*, in such as have received the name of *syncopales*, in the beginning of some attacks of intermittents †, in certain malignant and many other diseases, the heat is either less than natural, or, at any rate, is by no means greater. Besides, in the fevers called *epiali*, the patient complains not only of a sense of heat, but at the same time likewise of cold ; to say nothing of the *lipyriæ*, in which, whilst the internal parts

are affected with a sense of burning heat, those externally situate, particularly the extremities, are in the opposite state. Lastly, if the heat is too great, it is rather referable to the effects, than to what is called the essence of the fever; since, as has already been noticed, such *preternatural heat* is frequently absent from fever.

* Cap. 1. de generali febr. divisione.

† At the beginning of the cold stage of such fevers, though the patients complain of being cold, yet modern authors contend, that, by the assistance of the thermometer, it appears that the degree of heat is actually augmented. And they say so with justice, if the experiment be made in those accessions, in which, as we have often observed, before the coming on of the cold, the patients for some hours first grow warm, and have a quicker pulse; or at that period of the febrile cold, when it begins to lessen and the heat commences; or, lastly, in that case, when they are seized with trembling, but not in fact with cold. For they are often affected with a sense of cold, while the temperature of their body in reality is not diminished. If, however, the trial be made at the beginning of the true febrile cold stage, or after it has advanced, if no increase of heat has preceded it, or in those whose extremities at the approach of fever are manifestly pale, and actually cold to the touch, and, if by applying the thermometer to the body when cold, the heat is ascertained, it will without doubt be found diminished, as I have experienced more than once, by repeated experiments, before a numerous concourse of my pupils.

Another definition of Galen.

5. In a work of very ancient date, which is attributed to Galen *, four other definitions of fever are laid down; the first

of which (for we shall omit the others for the sake of brevity), is thus delivered: "Fever is a tendency of the natural heat of the body to a preternatural state, attended with increased strength and velocity of the pulse." Since this definition comprehends both the cold and hot stage, cold and ardent fevers, and the different periods of intermittents, and, at the same time, takes in the increased force and frequency of the pulse, by which the physician's judgement is guided concerning the nature of the fever, as it approaches pretty nearly to the truth, so it ought not to have been so readily rejected, or despised by medical men. But, in my opinion, even it does not give an adequate idea of the nature of fever: 1. Because the heat and cold seem rather effects of fever; 2. Because the heat is not always diminished or increased, as appears from the natural state of the heat with which certain malignant fevers are not unfrequently attended; 3. Because, neither in every fever, nor in the particular stages of it, *is the pulse always stronger and quicker, as shall afterwards be shewn.*

* Defin. med. inter opera Galeni, Class. 1. p. 46. C.

6. Others, not without some hopes of success, have had recourse to *effervescence*, in order to throw some light on the subject of fever. For, as they ob-

Fever reckoned
a preternatural
effervescence
of the blood.

served, that sometimes heat, sometimes cold*, was produced by different kinds of effervescence, considering that there was a great affinity between them and fever, they did not hesitate to pronounce fever to be a *preternatural effervescence of the blood*. But effervescence, properly speaking, is the sudden and sensible commotion produced by the meeting of two bodies, between which there subsists a strong affinity, and one of which at least must be in a liquid state, attended with *expansion*; in consequence of which a great quantity of fixed air, and other gases contained in them, is given out in the form of bubbles, for the most part with a hissing noise, and considerable heat, sometimes, however, without this last, nay, with actual cold. It is occasioned particularly by acids with alkalis, or the absorbent earths. Hence it was formerly esteemed only as the meeting and consequent struggle between an acid and an alkali. But it had not been sufficiently observed, that an *effervescence* takes place also from acids being poured upon metals and semi-metals, or even from the mixing together of powerful acids, as when sulphuric acid is mixed with a solution of silver, or from mixing them with simple water, or with etherial oils, or inflammable spirits; or from the affusion of liquid alkaline salts upon dry alkaline ones, as when oil of tartar *per deliquium* is poured upon dry salt of tartar, or from the

mixing of pure water with alkaline earthy-bodies, especially when reduced to a calx.

* Most effervescences excite heat. But a very common instance of the opposite effect being produced by effervescence, is afforded by the affusion of sulphuric acid upon sal ammoniac. For it is surprising, that a cold effervescence in this instance takes place, while warm vapours are perceived to arise. But, on the expulsion of the heat, why does not the remaining mixture continue cold? Nor is this the only instance of the kind. A cold effervescence is likewise occasioned by vinegar poured upon alkaline, earthy bodies, not reduced to a calx.

7. But the doctrine of effervescences, which physicians formerly supposed possibly might exist in the blood, has been so ably refuted by modern physiologists, that it has at length fallen into total disrepute. For no one yet has been able to discover in the blood, and other fluids, of the living animal, a pure alkali and an evident acid, by the union of which an effervescence might be excited. But if, on any occasion, either the one or other has been accidentally discovered in certain diseases,—which some medical observations seem to render probable,—for the most part it has been the effect, not the cause, of the disease; nor, as far as I know, was it ever noticed that such effervescence proceeded from their union. Every one, however, will at first sight perceive, that such effervescences as may arise from other causes cannot

The foregoing
doctrine re-
futed.

exist within the blood. Who ever discovered in the human body a highly concentrated and pure acid, (such, for instance, as the sulphuric or nitric), which, by its union with alkaline salts, or absorbent earths, or metallic bodies, if any such could really be detected in us, or with the watery fluid, could excite heat; or in conjunction with the ammoniacal salt, which does exist in our system, could occasion cold? In what part of our body can we discover those essential, or ethereal oils, or inflammable spirits, with which that acid can effervesce? Where shall we look for those dry alkaline salts, which can unite and effervesce with such as are liquid? Lastly, who ever observed a cold, precede a warm, effervescence, so as, on such a principle, to afford any solution of the cold succeeded by heat in tertian and quartan fever.

Whether fever be
a fermentation
of the blood?

8. Therefore, laying aside the theory of effervescences, others, in particular Willis, are disposed to consider fever as a fermentation of the blood, and compare its effects with the phenomena of fermenting must. Several of the moderns, who account for all things on the principle of fermentation, incline to this opinion. But many objections prevent us from adopting it; and, among others, 1. The wide difference which subsists between the blood and must, and other vegetable juices; 2. The

want of those conditions, which are requisite to fermentation, in the vessels of the living body, namely, rest, the mildest degree of heat, which the natural heat of the living body very much exceeds, and free communication with the external air ; 3. No such change taking place in the fluids from fever as succeeds fermentation, since, after the fever, or, to use their language, the fermentation, has subsided, the blood evinces no symptoms of the presence of wine, or vinegar, or inflammable spirit *.

* I find the term *fermentation* employed to denote many things, and even those of an opposite nature. But by it we here mean that which properly belongs to vegetables, and which is the only true fermentation. Again, it is divided into the *vinous*, *acid* and *acetous* stage. None of these processes can take place in the blood or human body, except in the *prime vie*. But in every fermentation the state of the former mixture is altered, and a new one induced. The opposite of this happens in *putrefaction*, in which the whole mixture is destroyed and deranged, all the principles are separated from one another, the oils are rendered fetid, the volatile salt rises and flies off, and thus an actual corruption and resolution of the whole mass takes place. Putrefaction, therefore, has nothing in common with fermentation to justify modern authors in denominating it a putrid fermentation, which is certainly a mere abuse of terms.

9. A definition of more extensive application was proposed by Laurentius Bellini. According to him, *fever is a faulty state of the blood, either in motion, or quantity,*

Bellini's definition.

or quality, or all of these respects *. This latitude of definition, however, not only points out no certain and peculiar mark of fever, but also is of such extensive application, that it can be equally well accommodated to many other diseases arising from the blood. Wherefore, the Boerhaave's opi- celebrated Boerhaave, though in
 nion. other respects much disposed to follow the authority of Bellini, not satisfied with this definition, and not finding the nature of fever clearly explained by any other author, undertook the examination of each individual symptom of fevers, and laying aside such as do not uniformly occur, but retaining those from the presence or absence of which fever is judged to be present or absent, and from the ceasing of which it is said to disappear, he thought he could thus be able to attain a true and perfect knowledge of fever. Hence he discovered, that in every fever three things take place from internal causes †, namely, the shivering, quick pulse, and heat, but differently at different periods of the disease. But from again considering these very carefully, he thought that he discovered only quickness of pulse ‡ present at every period of the disease, and therefore he concluded that the idea of acute fever consists in this alone.

* De Febribus.

† De cog. et cur. mord. § 563.

† It is not easy to say, what is to be called a quick, and what a slow or unfrequent pulse : for as there is a difference of men and the circumstances in which they are placed, so is there of the pulse. Generally speaking, it is more frequent in boys than adults, and less frequent in old age than in either of the former. In a full-grown person, in good health, at rest and tranquil, and fasting, the pulse beats from 60 to 70 times in a minute. In infants and boys in similar circumstances, it beats from 80 to 95 times ; and in old persons from 50 to 60. But it is proper to know that there are sometimes adults whose usual pulse is 80 or 90, or even more in the same length of time, while in others it does not commonly exceed 50 : yet both enjoy good health. This I have repeatedly observed. Therefore, unless the patient's general pulse has been previously determined, the presence of fever cannot be ascertained from the mere circumstance of frequency of pulse. On the whole, if credit be due to Duplanili, the pulse cannot properly be said to exceed in frequency, unless it beats one third oftener than usual. Thus, for instance, if a person's pulse in good health beats 70 times in a minute, in the same person, labouring under fever, it will rise in the same time to 95. This proportion, however, to me does not always seem necessary ; for, to constitute a quick pulse, it is sufficient that the pulsations exceed their usual number by a few strokes, and continue to do so for a considerable time. But it is said to be an exceedingly quick pulse if it rises to 5 or 10 strokes above 100. Almost the last degree of quickness, however, is when it beats from 140 to 150 times in the minute. But, in such a state, whatever others may affirm, the pulsations, on account of their very great velocity, can scarcely be counted or distinguished. (See Duplanili, in the note on p. 621. T. 5. of *Bucchan's Table de Matieres*). It is necessary, however, here to remark, that I have above considered celerity, velocity, and frequency of the pulse, as one and the same thing, contrary to what some think, as shall be afterwards pointed out.

The objections to
Boerhaave's o-
pinion.

10. But neither does every fever arise from internal causes, adopting Boerhaave's idea *, nor does every fever arising from such causes, not even intermittents, (for frequently those, which come on in the summer-season, begin immediately with heat), uniformly commence with cold shivering †, nor does every such cold shivering proceed from fever. This is a circumstance well known to hysterical women, who frequently experience a spastic shivering of that kind unaccompanied by fever. Nor does every quickness of pulse ‡, or increased heat, immediately denote the presence of fever. For many things, as exercise, running, rage, joy, sudden starting from sleep, excess in drinking wine and fermented liquors, full rich living, &c. quicken the pulse and increase the heat; yet in none of these circumstances can a person be said to be in a febrile state ||. Often, also, the heat in fever scarcely, if at all, exceeds the proper degree; nay, it sometimes even falls short of it. That very frequently occurs in malignant and pestilential fevers, and at the beginning of accessions, or even during the cold stage of fever: for at that time, when examined either by the feeling or thermometer, for the most part it is either found not at all greater, or is even diminished. The same thing not unfrequently has been observed to take place with regard to quickness of the pulse.

* Boerhaave calls that a fever arising from internal causes, which is produced by such as are not very evident, or are but slight. Thus would he have excluded *ephemeræ*, which generally come on without shivering, and originate from slight, and not evident causes.

† Gorter, *Compend. med. tract. sect. 52. § 3.* observes, "Fevers, excited by a warm stimulus, come on without previous cold."

‡ Quickness, or frequency of pulse, although it be considered by Boerhaave and others as an invariable symptom of fever, is by no means so uniform as not sometimes to be absent, which will appear more clearly hereafter. We have likewise already shewn, that such velocity can be increased in many ways without fever; from which it appears, if I mistake not, that fever is not so necessarily connected with it as some have supposed. A little above, also, (P. 9. in note), it has been observed in general, that the frequency of the pulse differs very much according to the person's time of life. Let me add to this, that it varies not a little according to the sex, country, and season, the temperament and emotions of the mind, to say nothing of the causes increasing it, which we have enumerated above, (p. 10.): yet these do not imply the presence of fever. I have adduced also Duplanili's opinion concerning the degree of the pulse which ought to indicate fever; but, at the same time, I observed, that the ratio which he establishes betwixt the natural and febrile pulse, is by no means to be depended on. It may be observed, moreover, that the most distinguished authors differ from each other with regard to this subject; wherefore, no fixed or unexceptionable rule can be laid down. Haller considered the pulse giving 100 strokes in a minute, as affording the surest criterion of fever. But such a rule is completely deceptive. It is frequently a matter of doubt, whether fever be present or not, when the number of strokes is much less, or, though this, or even a greater number, can be counted, no such

thing as fever is necessarily present. In the most violent kind of fever, Sydenham observed the pulse not different from the natural one, (*Oper.* p. 650.), and the same thing was remarked by Werlhoff, (*De caution.* p. 39. *De variol.* p. 37.), and likewise Gredingius, in the malignant contagious putrid fever, with white miliary pustules, which prevailed towards the close of the year 1756, (*Ludwig. advers. med. pract.* v. 1. P. 1. c. 1. p. 22.). But, in malignant fevers, in typhus, in the hemitritæi, and other very pernicious and pestilential diseases, it has been found less frequent than natural by almost all practitioners, both ancient and modern : among whom I shall mention only the name of Prosper Alpinus, (*Med. Ægypt.* l. 1. c. 14.), Nicolaus Massa, (*De febr. pestil.*), Rye, (*Med. stat. Brit.*), Ruffel, (*Natural History of Aleppo*, p. 230.), Bordeu, (*Recherch. sur le pouls*, p. 309.), Sauvages, (*Nosolog. method.* T. 2. p. 307.). Sarcone found it so very slow in an epidemic, which proved very fatal at Naples, that the pulsations did not exceed 40, or 45 in a minute, (*P.* 2. § 357. and 704.) ; Tremelius (*Exam. frig. febr.* p. 7.) makes mention of the pulse in a boy, labouring under the variolous fever, which was much less frequent than that of a healthy person, and a similar thing occurred in scarlatina. Nor is the pulse less frequent than usual, or similar to a natural one, in malignant fevers only, but also in other fevers merely acute. Thus De Haën (*Rat. med.* P. xii. c. 2. p. 50. and 117.) found the pulse of a young man of twenty-four, labouring under inflammatory fever, (whose pulse of course ought to have been quicker than usual), at one time a third, at another a fourth part slower, and at the same time but moderately febrile. When he recovered, his pulse became somewhat quicker than it used to be when he sat, during the disease, in the erect posture ; for it was quicker in that posture, but still never exceeded 55 in the minute. But, before their time, as Sarcone assures us, Galen, and others of the ancients, formerly remarked a fallacious pulse of this kind in fevers of a malignant nature. I would not deny, however, that Haller, as I have already observed, combats the opinion of them all, and

avowedly denies, that the strokes of the pulse are in fact found slow, if they are counted by the watch, unless some peculiar vitiated condition of the lungs or heart be conjoined with the fever, impeding the free passage of the blood from the lungs to the left cavity of the heart, or from the heart to the aorta, (Phys. T. 2. l. vi. sect. 2. § xv.). But, though I would not deny that that has sometimes happened, as Haller suspects, I certainly will never allow, that all the observations of the very learned and experienced physicians whom I have quoted, are to be called in question. For which reason let the testimony of the celebrated Le Roy be sufficient: for, although elsewhere he seems to adhere to Haller's opinion, he is obliged in one part to own (Mélange. de Phys. et Med. Prem. Mem. des fevr. aiguës, p. 204. note, c. c.), that he has fallen in with fevers, in which the pulse was uncommonly slow; insomuch that one person's pulse did not beat, according to the watch, more than 40 or 45 times; which completely agrees with the experiments of De Haën and Sarcon, which were carefully regulated by the watch. However, it seems undeniable, that a *peculiar faulty state of the lungs or heart* may sometimes occasion a variation in the state of the pulse. But it appears to me more probable, that, in consequence of such a circumstance, the pulse rather becomes unequal, or intermitting, than simply slower than usual. Hitherto we have adduced instances of unusual slowness of the pulse in fever; I shall now proceed to those of an opposite nature. Rye, (l. c. p. 224.), in cases of colic unaccompanied by fever, found the pulse up at 100: and Floyer observed it at 108, proceeding from a fit of anger, (l. c. p. 87.). De Haën (Rat. med. P. xii. p. 86.), mentions the case of a natural pulse, the usual standard of which was 115, or upwards; and likewise Whytt, of one at 120, without fever, (Malad. hypochon. p. 90.). Lastly, I pass over the enormous increase of the pulse from external causes, namely, motion of the body, the heat of the bath, food, and drink, so that sometimes 130 or 140 strokes in a minute are said to have been felt, without any fever. For which reasons the celebrated Tode, in his Specimen inau-

gurale de duplici febrium indole, (Hafniæ, 1769), rejects the frequency of the pulse, esteemed by many as a pathognomonic symptom of fever; and an anonymous author of Warfaw (*Observ. clin. ad duct. medic. in nosocom. gener. Varfav. Fascic. 1. p. 15.*) does the same; since, in persons truly labouring under fever, which he knew to be the case from other symptoms, he sometimes observed the quickness of the pulse to be wanting.

|| Those who make fever to consist in increased frequency and velocity of the pulse, that they may not lose sight of their theory, affirm, that fever is likewise present when the pulse is accelerated by evident causes. But I hope they will pardon me, if I differ from them as widely as such acceleration of the pulse differs from that accompanying real fever. For, since they confound things so essentially different, they do not seem ever to have comprehended the true nature of fever.

The difference
between fre-
quency and
celerity of
the pulse.

11. But, the arguments which have hitherto been brought against the frequency of the pulse, cannot be applied to those who think that we should look for the nature of fever not in frequency of the pulse only, but also in its celerity. For they distinguish these two states, with most of the ancients, but chiefly with the *Stablians*, who by *celerity* understand only the shortest space of time which passes while the stroke of the artery dilating itself presses on the finger. The less, therefore, the duration of the diastole is, the greater will be the celerity of the pulse. They add this increase of celerity to the febrile pulse, as the invariable and inseparable concomitant of fever. Nor will they

at all listen to those to whom this distinction seems very difficult. For that very short space of time, during which the artery vibrates, especially if the pulse at the same time be frequent, can scarcely, if at all, be observed and ascertained. But that this kind of celerity is distinct from frequency, is testified by Bellini *, Haller †, Sauvages ‡, Morgagni ||, De Haën §, and other very experienced and skilful physicians, from whom, if I may be allowed to subjoin my own experience, I myself do not differ in opinion.

* De urina et puls. p. 72.

† Elem. Phys. T. 2. p. 248.

‡ De febr. n. 10.

|| De caus. et sed. morb. ep. 24. et 32.

§ Rat. Med. P. xii. p. 27.

12. Those, therefore, who cannot support the frequency and velocity of the pulse, affirm that this celerity is never disjoined from fever. Among them Tremelius * esteems it so essentially necessary a part of fever, that he never observed a slow, or natural pulse in fever, which did not evince itself to be of a febrile kind by that *celerity of stroke*. But a little afterwards he seems to distrust that symptom, when he voluntarily acknowledges, that celerity of the pulse, the concomitant of fever, is

Whether the essence of fever be in the celerity of the pulse?

frequently rendered obscure and almost effaced by the extreme debility which attends such a pulse. Nay, from my own knowledge, I can confidently assert, that I have often observed this same celerity of pulse unaccompanied by fever, and that often in actual fever it was not at all discoverable. I have the support of the anonymous author, mentioned a little above, who does not hesitate to deny, that celerity of pulse alone is sufficient to indicate the presence of fever, and confirms his observations by adducing experiments in point †.

* *Frigor. febril. exam. p. 9.*

† *Observ. Clinic. ad duct. medicat. in Nosocom. general. Varsaviens. fasc. 1. p. 16. and 17. where he observes: "Pulsus autem (meaning in ardent fever) nec plenus ratione habitus, nec durus, nec celer, nec dicrotus, nihilque cum febrili commune habuit."*

Whether it is to
be sought for in
other affections
of the pulse?

13. Since, therefore, neither the frequency, nor the celerity of the pulse, implies any thing certain with regard to fever, some endeavour to supply the place of such marks by other affections of the pulse, namely, debility, or inequality, or smallness, or similar unnatural changes: nor do they perceive, that they are having recourse to those affections of the pulse, which have already been set apart, and excluded from fever by all those who have considered that mere frequency and ce-

larity of the pulse alone should be retained as a pathognomonic symptom of fever. Besides, they are directly refuted by the authority and testimony of the celebrated Le Roy, who never could discover either a weak, unequal, or small pulse, in any of the cases of fever in which he mentions its having been slow. Which being the case, there seems in fact, to be no good reason for making the *essence*, or nature of fever to consist in any of these affections of the pulse. That was well known, at a very early period, to Celsus, who is no less to be admired for his skill in medical science, than for his genius and sound judgment; and who, with his usual brevity and elegance, has reduced the substance of what I have discussed above at greater length, to the following words: “Non est expeditissimum scire, quando æger febricitet, quando melior sit, quando deficiat. Venis enim maxime credimus, fallacissimæ rei, quia sæpe istæ lentiores celerioresque sunt et ætate, et sexu, et corporum natura. Et plerumque satis sano corpore si stomachus infirmus est, nonnumquam etiam incipiente febre, subeunt et quiescunt; ut imbecillus is videri possit, cui facile laturo gravis instat accessio. Contra sæpe eas concitat et resolvit sol, et balneum, et exercitatio, et metus, et ira, et quilibet alius animi affectus, adeo ut, cum primum medicus venit, sollicitudo ægri dubitantis, quomodo illi se

habere videatur, eas moveat. Ob quam causam periti medici est, non protinus ut venit, apprehendere manu brachium : sed primum residere hilari vultu, percunctarique quemadmodum se habeat, et, si quis ejus metus est, eum probabili sermone lenire ; tum deinde ejus carpo manum admovere. Quas venas autem conspectus medici movet, quam facile mille res turbant ! Altera res est, cui credimus, calor, æque fallax. Nam hic quoque excitatur æstu, labore, somno, metu, sollicitudine. Igitur intueri quidem etiam ista oportet : sed his non omnia credere. Ac protinus quidem scire, non febricitare eum, cujus venæ naturaliter ordinatæ sunt, teporque talis est, qualis esse sanis solet : nec protinus etiam sub calore motuque febrem sese concipere : Sed ita, &c *."

* De Med. l. 3. c. 6. p. 128. 129. in certain editions.

Proximate cause
of fever according to
Boerhaave.

14. Hitherto I have been explaining what in general has been thought of fever and its nature. It now remains for us, as far as possible, to investigate its proximate cause, as it is called. It is necessary, therefore, to recur to Boerhaave, from whom we have departed somewhat too much, before we have recourse to his opinion on this subject. Having assumed *velocity* of the pulse, as the only, uniform, inseparable, and essential property of every fever, or placing in this velocity of pulse

its individual nature and existence, he next inquires into its proximate cause ; and he has no hesitation in pronouncing it to be the same as that of the velocity of the pulse above mentioned, namely, a more rapid contraction of the heart, with increased resistance at the capillaries * ; in which he was persuaded the idea of every acute fever consisted. And since, at the commencement of the febrile attack, “ According to the
 “ varieties of the subject, cause and fever itself, a
 “ quick, small, often remitting pulse, frequently
 “ paleness of the extremities, cold, rigor, tremor,
 “ and insensibility, appear in various degrees
 “ and manners, and are of various duration ;
 “ hence it is manifest,” says he, “ that the sanguineous fluids are then in a state of stagnation in
 “ the extreme vessels, and, at the same time that a
 “ cause irritating the heart is present †.” Hence we may discover the doctrine of lentor of the blood in some measure obstructing the extremities of the small arteries, opposing resistance to the heart’s more *powerfully contracting itself* ‡, and *increasing that resistance*.

* Aph. de cog. et cur. mor. § 752. and 581.

† L. c. § 576.

‡ Ibid. § 587.

15. But, as has been already said, What may be said in reply. neither in every fever, nor at every period of the same fever, is *velocity of the pulse*

discoverable ; in like manner, at first sight it appears, that *the more rapid contraction of the heart* cannot be assumed as its cause, nor can it be the proximate cause of every fever, which is what we are in quest of. Next, since a very distinguished writer supposes lentor, nay even stagnation, of the blood to take place in this case, that idea does not differ much from the supposition which he entertains respecting inflammation ; though inflammation and fever were never understood to be one and the same thing. Hence not a few of the observations which we have made in refutation of this opinion, when treating of inflammation, may be very properly applied here also. Besides, it is absurd and contrary to common sense, to suppose that in one case coldness and paleness of the extremities should be derived *from increased resistance at the capillaries and the more rapid contraction of the heart*, while in another, on exactly similar principles, he has explained the production of the redness, heat, and swelling of an inflamed part. Add to this, that the coldness and paleness which mark the commencement of fever, can by no means arise from the blood stagnating in the capillaries. For, while the body is pale and cold, all the arteries from the heart to the extreme vessels, in which the blood is said to stagnate, would be so completely turgid, that they would occasion a great,

full, and strong pulse, and not a small, weak, obscure, intermitting one, as takes place at that time, and is assumed as the characteristic pulse : and, therefore, not coldness and paleness, but heat and redness, would diffuse themselves over the whole system. Lastly, were I to grant the truth of Boerhaave's proximate cause, would it apply on the whole to every kind of fever, (which is the proximate cause we are at present in quest of), since even Boerhaave himself, as if distrusting his own opinion, was obliged at length to restrict it to acute fever only ?

16. Nor do I think that those What is to be thought of the other causes assigned. more certainly attain their object, who derive the proximate cause of fever from a spasmodic contraction of the nerves and all the fibres *. For, though many of the phenomena that occur in intermittents are such as seem to favour their mode of reasoning, yet they are either wanting in other fevers, or are by no means peculiar to them, or do not at all correspond with the particular periods of them all in such a manner, that those which have a certain degree of resemblance in one kind of fevers, are confirmed by probability also in another ; to say nothing of the falsity of that hypothesis, by which it is supposed, that the nerves are endowed with contractility. For who now does not know that such a power is inherent in the muscular fibre

alone, but that other parts, whether nervous or membranous, possess no such thing? It is a similar blunder which they labour under, who uphold a double motion in fever, the one from the heart to other parts, the other from such parts to the heart; deriving the former from the force of the heart propelling the blood into the arteries, the latter from a spasm of the parts more remote, which not only resists the former, but even forces the venous blood towards the heart. Nor do I altogether comprehend the meaning of those who consider what they call a *spasmodic and convulsive velocity of the pulse*, as the cause of all fevers †. For, in whatever manner they explain it, they cannot avoid the objections to the velocity of the pulse mentioned above, nor can they ever shew that such a *spasmodic and convulsive velocity of the pulse* does not often occur in other diseases also, especially in those of a hypochondriacal, or hysterical kind, in which it is unnecessary to say how much, from the state of the pulse, both the patient falsely believes himself to be in a febrile state, and an incautious physician is deceived.

* Hoffman. Med. Rat. Syst. T. iv. sect. 1. § iv. who first started the opinion.

† Among these Quesnay *des fevr. contin.* T. 1. c. 1: p. 80.

17. For which reasons, I suppose, Tode's opinion, it has happened, that certain writers very recently have deserted the opinions of their predecessors, and have bestowed much pains and study on the investigation of other proximate causes; but as it appears to me, their endeavours have been altogether unsuccessful, and the result has fallen far short of their expectations. In the number of those, that I may not seem to despise new doctrines from my ignorance of them, or to detract from the discoveries of others, I shall not pass over the theories of two very illustrious medical authors, I mean Tode and Cullen; the one professor in the University of Copenhagen, the other in that of Edinburgh, and both equally distinguished by their genius, learning, and experience. Tode, then, in his work, *De duplici februm indole*, published in the year 1769, supposes the proximate cause of fever to be some kind of irritation of the sensorium commune, communicated in different ways to all the other parts of the body. He moreover adds, if the stimulus producing such irritation finds nature herself compliant, that is, prompt and ready for action, that there arise inflammatory fevers; but if, on the other hand, the stimulus, either in consequence of the violence of the disease, or the debility of nature, be in some measure blunted, that then only *putrid* fevers arise; and these are

the two principal kinds of fevers which he admits of. The proximate cause of fevers, then, according to Tode, is irritation of the nervous system, not arising in the heart, nor in the minute vessels, nor in the membranes, or branches of nerves, but in the medullium of the brain itself, and propagated from thence to other parts *. In this notion, what there is in common with others, and what peculiar to itself, every one, I suppose, will readily perceive from the preceding remarks.

* Spec. inaug. de dup. febr. nat. Hafniæ, 1769. p. 19. et. seq.

Cullen's. 18. Now I come to Cullen, who did not publish his singular and new opinion until the year 1777 *, although he had been in the practice for several years before of delivering it to his pupils in his public lectures; so that a certain anonymous writer, concealing the author's name from whom he received it, not very long ago, did not scruple to produce it as his own discovery †. Cullen, therefore, and this anonymous plagiarist, conceive the idea of some kind of atony, and subsequent spasm, of the extreme vessels, which they esteem as the proximate cause of all fevers. Observe how Cullen himself explains the matter, if I understand his meaning rightly, for there is a degree of subtlety and obscurity in it. "All the remote causes (says

lie) by which every kind of fever is excited, act upon the whole nervous system, and, therefore, on the brain itself, in such a manner that the powers and functions of both are diminished. Hence it of course follows, that all the functions of the body, but especially the motion, or alternate contraction, of the small arteries, by which the fluids are impelled, must become extremely languid. But such is the nature and construction of the animal economy, that such a languor, or debility, affords a kind of indirect stimulus, as it were, to all the blood-vessels. For by the cold and spasm, which succeeds the languid motion of the small vessels and blood flowing through them, the action both of the heart and larger vessels is excited, and increased, until, being gradually augmented, it goes so far as to restore their wonted force and functions to the brain and nerves. But, when these are restored, it necessarily follows, that the small vessels likewise should regain and perform their functions more vigorously, and therefore overcome the spasm with which they were affected. On the spasm being thus removed, an universal sweat breaks out, together with other symptoms, pointing out, that all the outlets assigned to each secretion are at length in a state of relaxation †."

* First Lines of the Pract. of Phys. for the use of students in the university of Edinburgh, 1777.

† Reflections on the general treatment, &c. London. V. Med. Com. of a Soc. of Gentlemen in Edinburgh. V. 1. p. 1. c. v. Venez. 1775.

‡ See also *Raccolta d'opuscoli scelti sulle scienze, ed arti fatta in Milano*, T. 2. P. 6. p. 417. where Cullen's investigation of the proximate cause of fever is to be found translated into Italian. This theory of Cullen's was adopted by Fouquet, (in a note on Lind's *Memoir. sur les fièvre*. p. 226.), who has given us a somewhat more ample explanation of it. With several British physicians, he observes: "If the symptoms are considered, which are commonly observed in the various stages of fever, it will readily appear, that the action of the same poisonous or mercurial matter, which, on entering the system, gives rise to violent fevers, consist in diminution of the nervous energy, and natural tone of the brain, as is shewn by the weakened action of the heart and great arteries, which is observable in similar cases. Hence, also, the blood is no longer propelled with sufficient force to the small superficial vessels, which are spasmodically contracted, particularly in consequence of the sense of cold felt at the surface, either because motion, heat and the fluids, are driven to the central parts of the body, or likewise because the tone of the nervous system is in a state of languor. Hence the paleness, lassitude, spasmodic constriction, and remarkable shrinking of the whole surface of the body, which occur at the commencement of the cold fit in fevers, ought to be considered as effects of spasm, occasioned by the debility of the nervous system, properly so called, and diminished action of the heart and arteries. ----- For the solid parts in animals are elastic, and the blood-vessels, in particular, in their natural state are in some measure distended by the impetus of the blood constantly propelled into them, and which reaches to the extremities of the capillaries. From

" what is here laid down, it is manifest, that, in consequence of
 " the blood flowing back towards the heart, during the febrile
 " cold, the distension of these extreme vessels, on account of
 " their native elasticity, ought to be diminished. But, at the
 " same time, because the vessels are provided with a certain
 " muscular contractility, it follows, that they should not only
 " be sensible of the general spasmodic constriction, which takes
 " place in the cold stage, but that they should continue for
 " some time in this state, contrary to what would happen if
 " they were merely endowed with elasticity. During the pa-
 " roxism, indeed, although some time passes until the heat ap-
 " pears, and the action of the heart and arteries is restored;
 " the contraction, however, seems still to continue in the ca-
 " pillaries, for a longer or shorter time, as appears from the
 " dryness of the tongue and skin, the scantiness of urine, dry-
 " ness of ulcers, and from other symptoms, all tending to shew
 " that the spasmodic constriction of the whole surface has not
 " yet ceased. It is manifest, therefore, that debility of the
 " whole nervous system, properly so called, and of the action
 " of the heart and greater vessels, in the febrile accession, im-
 " mediately excites a spasmodic constriction of the surface and
 " extreme vessels, on which most of the symptoms, as the tre-
 " mor, horripilatio, cold, aversion to motion, together with
 " the sense of anxiety and uneasiness, depend. But that the
 " tremor supervenes on debility alone, is proven by the diffi-
 " culty with which patients move their limbs when they at-
 " tempt it. Nor does the grinding of the teeth proceed
 " from any other cause than the alternating of debility of
 " the muscular strength and voluntary effort. But since the
 " retrograde motion of the fluids, heat and strength from the
 " surface to the internal parts of the system at length occasions
 " irritation there; it follows, that after a longer or shorter
 " time, there arises a kind of re-action from the internal
 " parts to the surface, by which the action of the heart and
 " great vessels is revived, that of the nervous system is increased,

“ and the spasm of the capillaries at length ceases, and thus the
 “ heat is spread more and more over the whole body, and, the
 “ skin shortly becoming universally moist, a period is put to the
 “ fit.” Such is the illustration given by Fouquet, which, although somewhat more elaborate and specious than that of Cullen, may be refuted with the same arguments with which Cullen’s is opposed in the subsequent 20th paragraph, besides that many symptoms, which are ascribed by him to spasm, may be attributed with equal justice to the quickened motion and greater tenuity of the fluids.

Why Tode’s opinion is not to be adopted.

19. Let it be sufficient thus far to have given a sketch of each of their opinions. I purposely pass over the great bulk of the objections which may be made to them : for I am averse to entering into a tedious contest with authors, whose authority, and the fame of whose learning, in every one’s opinion, carry such weight with them. I will only observe, that no person in his sound senses can give his assent to the opinion of Tode. For who is so dull and stupid as not immediately to perceive, that, were the sensorium commune irritated, as he supposes it to be, a derangement of all the ideas and powers of the mind, and spasms, convulsions and pains, ought to be excited before febrile motions, as has already been shrewdly observed by Gorter *. Who can ever believe, that all the remote causes of fever are of such a kind as immediately to affect the brain, or sensorium commune, and are alike provided with

that kind of stimulus, which, while it has no effect upon other parts and fluids, acts with violence on the sensorium commune? Besides, were that the case, as he insists, it would inevitably follow, that all kinds of fevers, chronic or acute, mild or severe, benign or malignant, *gastric* or *venous* †, primary or secondary, the various species of intermittents, whether of the continued or remittent kind, as having the same proximate cause, ought to be removed by the same medicine, namely, the Peruvian bark. Which, however, is absolutely absurd. But more of this hypothetical doctrine hereafter, when we come to treat particularly of intermittents.

* L. c. § ix.

20. There is scarcely any one, I imagine, who will not immediately perceive, that Cullen is involved in the same difficulties. But he differs from Tode principally in this, that, although likewise he supposes the brain and nervous system to be affected by the remote causes of fever, he contends, however, that totally opposite effects are produced by them. For the former is of opinion, that the nervous influence is excited by a certain irritation, the latter supposes that it is depressed and blunted: hence there necessarily

The difference
betwixt each
opinion.

I 3

† Specimens of *Medical Jargon*, depending on vague hypotheses, too much in fashion on the Continent! T.

arises no small subject of controversy between them. In the next place, if a diminution of the nervous influence produced such an atony in the extreme vessels, giving rise to cold, spasms, and fever; it would doubtless follow, that fever much more certainly and frequently would supervene in all paralytic complaints, in which the presence of atony cannot be denied. But why is fever so seldom observed to take place in apoplexy, hemiplegia, paralysis, at least in persons with paralytic limbs, in which every body knows that the nervous energy is in a languid state? Besides, it is a fact, that all fevers do not begin with cold. In such, therefore, we shall not be able to find the primary cause by which, according to Cullen, the action of the heart and arteries is renewed, and fever is excited. What then must we consider as the proximate cause of fever? Lastly, I should wish him to explain the origin of those intermittents, each accession of which, as shall be shewn hereafter, commences with heat, is attended with heat in its progress, and is eventually terminated with cold. For in these the febrile symptoms appear in so inverted an order, that they seem to me to be incompatible with his hypothesis.

No universal
proximate
cause of fever
can be assigned.

21. I might throw away both pains and time in enumerating the chimerical notions of other pathologists with regard to this subject; but

I am already heartily disgusted with having been detained by so ungracious a task. I hope, however, I have attained my object; for it was my intention to shew that no proximate cause of fever can be laid down, which is in common to all fevers whatever, however different in kind, and with respect to variety of symptoms; nor, as I imagine, has my labour been altogether thrown away. Since, therefore, no proximate cause has hitherto been discovered, nor perhaps ever will, as the celebrated Gregory * supposes; and since a generic definition, comprehending every fever, seems impossible: it re- Description of fever. mains for us to rest contented with its historical description alone, by which the principal phenomena are exposed to view. Gorter † very properly remarks: “In many things nothing more is known than certain phenomena. Why therefore shall we not be content with those in the case of fever?”

* Prax. Med.

† L. c.

22. But the description meant to supply the defect of the definition Sauvages's description. ought in the first place to be short; next, it ought to comprehend all the phenomena which are common to every kind of fever. Sauvages * being well aware of this, pronounced fe-

ver to be a *concourse of symptoms in which cold and successive heat, with weakness of the joints, and increased force of the pulse, often with regard to frequency, take place.* But was this a sufficiently ac-

The objections to
Sauvages.

curate description? Surely not. For, 1st, He seems to omit those fevers, which are preceded by not even the smallest degree of cold; of which mention has been made above, and will occur hereafter. 2dly, Even when fevers begin with cold, heat does not uniformly succeed it; for, in the *febris algida* of Torti, the patients never regain their warmth, until the accession, and therefore the fever, is completely discussed. 3dly, The strength of the pulse does not always increase, not even in *frequency*; since in certain malignant fevers its force is often weakened, and it is so far from being frequent, that, for the most part, it either resembles the natural one, or is even slower, and less frequent. Thus also in the beginning of intermittents, the pulse is not only low and languid, but becomes even slower and less frequent than usual, as I myself have often proved by the watch. There remains, therefore, only the weakness of the joints; which, however, every one knows to be a symptom in common to many other diseases.

* Nosol. method. class. 2. Febres, character. Cullen's definition is very similar to that of Sauvages's. "Post horrorem

pulsus frequens, calor major, virbus artuum imminutia." Gen. Morb. class. 1.

23. Nor did Sauvages's definition of fever meet with the approbation of Selle's definition of fever. Selle, who published his *Pyretologia Methodica* after him. Whence he was led to frame another which he conceived conveyed a more proper and correct idea of the subject. *Fever, then, according to Selle, is a disease attended with cold and heat, and a pulse sometimes quicker than natural, sometimes slower, in various degrees, and at various periods of the disease* *. He adds, moreover, that the presence of fever was never called in question by any one *who observed a person seized with the symptoms just now enumerated*. But, granting this, I would beg leave to ask, whether or not, when such symptoms are wanting, it be equally certain that no degree of fever is present? For it frequently happens, that certain symptoms denote the presence of a particular disease, while their absence does not to a certainty evince that the disease is not present. I doubt also, whether those symptoms are uniformly present in every fever, and whether or not their presence, when they really have been observed, might not rather have been characteristic of some other disease. The objections already mentioned against Sauvages (par. 22.) seem likewise suffi-

ciently applicable to Selle. I would add, however, that often in hysterical complaints the body is cold, and shortly afterwards becomes warm, and that the pulse is sometimes quicker, sometimes slower, than usual, both in various degrees and at various periods, yet no one with any propriety could affirm that a woman in such a case labours under fever. Hence probably, on more mature consideration, the author of this definition afterwards seems to hesitate concerning the truth of the characteristic marks he had laid down, as may be easily perceived from the hypothetical reasoning to which he has recourse a little after in the same place.

* *Pyrotol. Method.* p. 83.

24. The description given by
 Vogel's descrip-
 tion. Vogel seems much more exception-
 able ; according to him, *fever is a preternatural increase of the natural heat of the body, with dryness of the mouth, and heaviness* *. With regard to the increase of heat, the objections brought against Galen, (4. and 5.) may be repeated here. But it is well known, that *dryness of the mouth, and heaviness of the body*, are common to other diseases, especially to dropsy ; and that they are also frequently absent from fever, is clearly proven in the case of hectic fever alone, in which the patients are scarcely sensible of any

uneasiness, inasmuch that they are persuaded of being free from such a complaint.

* Definit. gen. morb. cl. 1.

25. What shall we say of those, in other respects men of great learning, who conceive fever to be *a quickened pulse, with lesion of some, or almost all, the functions of the body**. Is it thus sufficiently distinguished from hypochondriacal affections, in which *quickened pulse, with lesion of several functions*, occur so frequently conjoined? Who does not know, that in organic affections of the heart, especially aneurisms, quickness of the pulse is very frequently joined with injuries of the respiration and abdominal viscera; nay, with a vitiated state of the whole system, in such a way as to give it the appearance of a febrile one †.

Others refused.

* Schachtii Instit. med. pract. p. 4. and others.

† Such is the frequency and greatness of the pulse in these cases sometimes, that the celebrated Cocchi (Bagni di Pisa, p. 155. and 156.) did not hesitate to denominate such a case *fritis aneurismatica*.

26. From the preceding observations, (for I do not wish to prosecute any farther the sentiments of others on the subject), I imagine it may be sufficiently understood with how much difficulty

What the description of fever should be.

a short, perfect, and generic description of fever, to supply the place of a definition, is attended. Since fevers, therefore, both at their commencement, and during their progress, at their declension and departure, according to the nature, causes, and symptoms of each, and the subjects they attack, assume the greatest variety of appearances, which cannot be properly comprehended in a few words; it is of great moment to give a very full and accurate description of the complaint; or, from the symptoms and peculiar affections of each, which are obvious to the senses, and can be attended to by the physician, some more certain knowledge of it may be had, that our judgement concerning the presence of fever may be the better guided.

What things may
be considered
in fever.

27. But, when such a judgement is to be formed, the practitioner examines the patient's pulse at the wrist, and sometimes at the temples; he tries the heat of the skin, breast, and forehead, by applying his hand to the parts; he inspects the urine; he attends to the colour and appearance of the face, eyes, and tongue; and carefully inquires into the state of the different functions; and, according as these, or several of them, deviate from the usual order of nature, he pronounces fever to be present.

28. The pulse is extremely variable: it is either small, weak, slow, unfrequent, contracted, and unequal; or it is great, strong, quick, frequent, full, and regular; or hard, or soft, according as the fever is incipient, or at its increase, or height, or during its remission, and at its termination; or according as the fever itself differs in its kind or nature. Likewise, the heat is sometimes equally, sometimes unequally diffused; sometimes the external parts are cold, while the internal are warm, or a sense of burning heat is felt: at one time all parts of the body are cold; at another, a sense of heat and cold alternates; at one time the heat is most intense and burning; at another it is mild, and almost the same as natural.

The nature of the pulse, and degree of heat.

29. The urine is sometimes voided crude and aqueous, at others of a deep red colour, and thin; often it is thick and like that of cattle, soon becoming turbid and depositing a sediment; sometimes it is the same as natural. The face is sometimes pale, sometimes red and swollen; at one time it is very different from its usual appearance in health, at another it seems scarcely, if at all, altered. The eyes are either heavy and dull, or are red, impatient of light, protruded, wild and ferocious, or are too shining,

The state of urine, face, and eyes.

glazed and haggard ; sometimes they are bedewed with tears, and deprived of their wonted lustre.

The tongue, taste of the mouth, aversion to food, &c. to be considered.

30. The tongue, for the most part, becomes dry, cracked, rough, red, or whitish, or is covered with a variegated mucus ; but, not unfrequently, it is moist and natural, nor is the patient distressed with any thirst. The mouth, for the most part is bitter, or some other disagreeable taste is felt. The respiration is hurried, warm, unequal, and laborious. The breath is often fetid. All desire for food is generally lost, or is sometimes succeeded by nausea. To these symptoms are added, pains of the back, joints, and head ; prostration of strength ; wakefulness, or deep sleep ; stupor, or imbecillity of mind ; delirium ; looseness of the bowels, or the opposite state ; vomiting ; tension of the hypochondres ; subsultus tendinum ; emaciation, and other affections, which are either conjoined with fever itself about the commencement, or come on gradually. But the preceding symptoms are spontaneous lassitude, diminished and disturbed sleep, heaviness of the head and body, and sluggishness, lesion of the natural and animal functions, or some remarkable fault *in the six non-naturals*.

31. From an accurate examination of these symptoms, the presence of fever may be easily detected. (27. 28. 29. 30.) For neither an unfrequent or slow, a quick, or frequent pulse, nor the heat, nor natural colour of the urine, nor the absence of thirst, nor the prostration of strength, nor its remaining undiminished, will lead the physician into error, if he does not ascribe too much to each of them apart. For they must necessarily be conjoined before any certain inference can be drawn from them. There are, however, a few The diagnosis. symptoms, which, I confess, are generally peculiar to the febrile state. The more frequent and peculiar symptoms.

At the commencement the patient for the most part is seized with trembling or rigor, or becomes cold, more rarely he is attacked with fainting, or has a strong propensity to sleep; shortly afterwards he is affected with great and long-continued heat, together with a certain anxiety, and, in a particular manner, with languor, thirst, dryness of the mouth, and pain of the head †, or heat and other uneasy sensations. But if to these are added frequency and celerity of the pulse, I do not deny that our judgement may be formed with more certainty. Wherefore the celebrated Buchan * has laid down as the principal and most uniform symptoms of fever, *excessive heat, quick pulse, loss of appetite, debility of the whole system,*

and some difficulty in performing both the vital and animal functions †.

* L. c.

† Of such consequence was this symptom held by Le Roy, whom Duplanili quotes, that when the marks were wanting in the pulse by which the presence of fever is indicated, he turned his attention to the head-ach, which, when it is not very manifest, may be easily detected by causing the patient to put himself in motion, or by his moving his head. Duplanili in a note on Buchan. l. c. p. 15.

‡ Although, as we have already observed, we can scarcely look for a proper and full definition of fever, yet a description of it, taken from its symptoms and effects, ought not to be despised, since this is the only way in which fever can be announced in a general manner. Such, perhaps, is the following: *An universal disease, affecting most of the functions, sometimes acute, sometimes chronic, at one time constant, at another intermittent, and returning at intervals, caused by foreign bodies, generally conjoined with diminution of the animal powers, quick or frequent pulse, and change of the natural heat, disordered by concoction, or some critical excretion, when it is primary, and terminates in a return of health.*

Conjectures of the
nature and causes
of fever.

32. It has appeared, if I mistake not, from what has already been observed, (4. to 20.), in investigating the nature of fever, that its proximate cause is involved in great obscurity, and scarce to be guessed at. If any place, however, may be allowed for conjecture and supposition in a matter of such ambiguity, it is probably to be sought for partly in the solids, partly in the fluids, and in

their mutual action. For it is not unlikely, that the blood, and fluids secreted from it, swerve so much from their natural state, either in quantity or cohesion, or mixture, or quality, and acrimony, both spontaneous and accidental, that the motion of the heart and arteries, and, therefore, the whole economy of the circulation and other functions, are deranged in various ways. Nor does it seem less consistent with reason to suppose, that the whole set of fibres, both muscular and nervous, are affected in such a way that there arise spasmodic and inordinate contractions and unusual affections of some parts, which not only add strength to the original disorder, but derange the whole nervous system, so as to cause it alone to seem affected.

33. Hence, (32.), if the circulation of the fluids is retarded or rendered unequal, or the fibres are spasmodically contracted, or the nervous sensibility is irritated, or otherwise morbidly affected; it is an easy matter to understand the reason of the *horripilatio* (goose-skin), shivering, *rigor*, cold, or apparent cold, weakness; as also that of the heat, and likewise the paleness, lividity, anxiety, oppression of the breast, yawning, nausea, vomiting without the stomach being loaded, the slow, unequal, and variable pulse, congestion of the fluids, stupor, lethargy, thirst, and other symp-

Explanation of
the symptoms.

toms, which are so usually the concomitants of fever, either at its commencement, or during its progress. But if, on the *irritability* and *sensibility* being increased, the motion of the heart and arteries is augmented, and the circulation of all the fluids accelerated, a very ready explication will be afforded of the quickness, greatness, and impetus of the pulse, of the heat, redness of the face, headach, watching, alienation of mind, inflammations, and other consequences of quickened circulation, which are often the concomitants or sequels of fever. Nor will it be a difficult task for him, who pays attention to general pathology, to account for every other febrile symptom.

34. But the remote causes, though
 Remote causes: almost without number, seem to be more manifest ; among which are ranked both the proegumenæ and procatarticæ (predisposing and primary). Of these some proceed from the mind, some from a bad conformation of the body ; some act externally, others internally.

Those from the mind. Those which proceed from the mind, are violent passions, rage, grief, melancholy, intense study, fear, and love, a disappointment in which is extremely apt to occasion slow fevers in particular. For when the state of the brain and nerves is deranged, the motion of the heart is disturbed also ; all the secretions and excretions, especially those of the gastric juice,

the bile, pancreatic liquor, and perspiration, are diminished or vitiated ; the strength of the solids is weakened ; digestion, the crasis and motion of the blood are rendered morbid, and thus a pre-disposition to fever is occasioned.

35. Those proceeding from the body are certain vitiations of the fluids and solids, in consequence of which some are more, some less, predisposed to fever. Under this head comes the patient's time of life and temperament, plethora, a morbid state of the bowels, hypochondriasis or hysteria, scurvy, vitiated fluids, and a bad habit of body, lues venerea, a disposition to rheumatism, and similar circumstances.

Those proceeding from the body.

36. But we must not omit to observe, that the power of the primary cause is sometimes such as immediately to overturn and throw into bad health the best and soundest constitution. A thorn thrust into the toe may excite such pain as to give rise to fever, the body may become affected with rigor, and in consequence of spasm being induced, or gangrene supervening, death may at last be occasioned. Swallowing poisons, or the inhaling, or swallowing, or absorption by the skin, of poisonous, malignant, or pestilential vapours, quickly infects and corrupts the blood, lymph and other fluids ; or irritates and contracts,

The power of the primary cause sometimes very great.

or relaxes and softens the fibres of the heart, arteries, or stomach, and other viscera, in various ways; or shortly injures, deranges, or destroys the origin and energy of the nerves, according to the peculiar nature and power of each.

37. The following things also have a great tendency to induce fever: namely, excess in eating or drinking, and too much indulgence in venery; likewise acrid, putrid, or corrupted substances, taken into the system, or generated in it, or too long retained, indolence, and indulgence in sleep; violent exertions; walking in the heat of the sun; the sudden transition from an oven, or any other very warm place, to the cold air; dwelling in a moist, marshy country; an atmosphere surcharged with thick, moist, or otherwise noxious vapours; in one word, whatever can change the natural state of the fluids and solids.

38. But let us return to fever itself. In it Nature seems to endeavour to change the cause, or morbid matter, in such a manner as to prevent its any longer proving hurtful, and that it may be carried off by some of the excretions. It is, therefore, subdued by the febrile motion, in such a manner that it is either corrected, or expelled,

Instances of peculiar causes.

The effects of fever.

or undergoes such a change as to be no longer capable of injury; or the efforts of nature proving fruitless, it becomes so much more noxious as to entirely overwhelm and destroy them. Fever, therefore, terminates either in

health, passes into some other disease, or at length proves fatal. If

How many terminations fever has.

the vital powers are vigorous, and the cause of the disorder is not very great, nor of so malignant and obstinate a kind as not to be subdued, changed, or expelled, by means of the efforts of nature, we may then entertain hopes that there will be no occasion to call in the physician's assistance. But, if they are deficient, or languid, or the cause of the disease is of such a kind as to be very difficultly removed or correct-

When there is occasion for the aid of art,

ed; then the attention of the physician, with the regimen and medicines prescribed by him, may effect what nature alone and the vital powers might have attempted in vain *,

* It would be highly proper to consult a Dissertation of Planchonius (*Le Naturisme, ou la Nature considérée dans les Maladies, et leurs traitement conforme à la doctrine, et à la pratique d'Hippocrate, et de ses sectateurs*), in which, with much learning, he points out when the case should be entrusted to nature, and when it is preferable to employ the aid of medicine.

Symptoms of sufficient strength in the vital powers.

39. The vital energy is supposed to be sufficiently great, when the heart and arteries possess as much motion and strength as to be able to overcome the resisting causes which the quantity, acrimony, and lentor of the blood and spasms occasion. The blood is then forcibly propelled through all the vessels, and a remarkable mutual attrition of the whole fluids, both upon one another, and upon the vessels, succeeds. Hence heat is every where diffused, which greatly assists * the attenuation, resolution, concoction, and change of the fluids: hence every taint is removed from them, or whatever impurity or noxious matter remains, is eliminated by the discharge of urine, sweat, expectoration, vomiting, or by the alvine excretion, and the fever disappears.

* The heat was considered as a matter of great moment by Galen; nor has it been esteemed of less consequence by many others, particularly in our own times, by Quesnay and Lieutaud, both distinguished for their learning and professional experience.

What degree of heat is useful.

40. The heat, therefore, ought not always to excite alarm, especially in fevers requiring what they call a purulent concoction, provided it be not too great, and do not very much exceed the bounds of the natural heat. Without its assistance the

matter, if there be any such occasioning the disease *, often remains in a crude state, and undergoes no manner of change: nay, remaining within it either suppresses the vital motions, or not being sufficiently agitated, nor corrected, nor digested, it infects and corrupts the whole mass of blood and other fluids with which it is mixed. Hence moderate heat, which depends on the free circulation of the fluids, and on a solution of the spasms, is generally to be desired. For, by means of it, not only the shivering and cold are removed, but likewise the concoction and crisis are prompted.

* It is sometimes fruitless to refer the cause of the crudity to some quality of the morbid matter existing in the blood. Therefore, Jo. Nathanael Pezoldus, in his *Specimen pathologicum de prognosi in febr. acut.* Lipsiæ, an. 1771, very properly supposes, that it is generally rather to be ascribed to the continuance and violence of the spasms, than to the fluids alone. And he is of opinion, that the corrupted matter, which is sometimes excerned under the appearance of a crisis, and resembles the nature of pus, is not unfrequently rather the effect, than the cause, of the irregular motions of nature. If this ever happens at all, it appears to me to take place particularly in certain malignant and putrid fevers, in which flocculent urine, with a copious sediment, is passed, while the disease is extremely crude, and increases by its long continuance, affording thence an unfavourable prognosis. In consequence of which, physicians, who are not sufficiently on their guard, are often deceived, holding these to be symptoms of concoction. But I consider such a fallacious deposition of sediment, which by no means gives reason for pronouncing a favourable

event, as nothing but the sound fluids dissolved and attenuated by the fever, while the true morbid cause remains unsubdued and in full force.

Effects of excess
in the vital
powers.

41. Sometimes, however, it happens that the vital powers are not only not deficient, nor simply suf-

ficiently vigorous, but become immoderately excited. Then, from the excessive motion, attrition, and heat, there is reason to apprehend that the whole body may be thrown into a state of inflammation, or inflammatory diathesis, or may be injured by an *alkalescent* acrimony. Some

Other prognostics. even apprehend, that a putrid disso-

lution of the fluids may proceed from that cause; which, however, rarely takes place in consequence of it alone. But it is to be the more dreaded according as unexpected shivering and cold, especially of external parts, supervene upon intense heat. The celebrated Van Swieten says *, that those fevers are almost always fatal, in which intense heat is felt about the vitals, whilst the extremities are cold; which I myself have more than once observed. For it is generally a proof of gangrene or sphacelus threatening the internal parts. In acute fever, likewise, great danger is indicated by thin, limpid urine, watching, a deranged state of the bowels, emotion of mind, anxiety, and much more, if to these is added coldness of the extremities.

Galen † affirms, that the principal symptom of approaching death, without being preceded by a favourable crisis, is prostration of the strength; the next is perfect crudity; more especially if the disease be violent and malignant, and quickly excited ‡.

* Upon Boerhaave, § 579.

† De crisib. l. 3. c. 10.

‡ Since it has been already (38.) said, that fever terminates either in health or death, or in other diseases, I shall not omit several extracts from the Aphorisms of Hippocrates, which I shall subjoin for the better enabling the practitioner to foretel the event of fever. But I shall in the first place mention in what diseases the supervention of fever proves serviceable; for, as we have elsewhere hinted, (1.) it has sometimes been attended with good effects. "If a person," says Hippocrates, "in a state of intoxication, suddenly loses the power of speech, he dies convulsed, unless he is seized with fever, or recovers his voice at the time when the effects of his debauch generally go off." Aph. sect. v. 5. "Distension, or rigor of the nerves, is relieved by the accession of fever." Sect. iv. 57. "Persons in good health, who are suddenly seized with a head-ach, and immediately become speechless, and fall a-snoring, are cut off in seven days, unless they are attacked with fever." Sect. vi. 51. "Universal pain in the liver is sometimes removed by fever supervening." Sect. vii. 52. "But the pain must be unaccompanied by inflammation." Sect. vi. 40. This I have often found to happen in the *colica icterica*, arising from calculi in the gall-bladder. Fever likewise cures volvulus occasioned by strangury, sect. vi. 44. coac. 475.; sore eyes, impotence of body from a wound, coac. 222. 477.; apoplexy, coac. 479. I shall now add something concerning the various prognoses in fevers. "Very mild or safe fevers terminate on the fourth day, or sooner; but those of the most malignant or violent kind, on the fourth, or sooner,

prove fatal." Prænot. 122. "The first attack of fever continues four days, the second seven, the third eleven, the fourth fourteen, the fifth seventeen, the sixth twenty." Prænot. 122. "It is difficult to foretell the event, when rigors, during fever, happen on the sixth day." Sect. iv. aph. 29. "In the beginning of fever, hemorrhages coming on with sneezing, and a white sediment in the urine on the fourth day, announce that a solution of the disease will occur on the seventh." Coac. 149. "Urine in fever, having a white and smooth sediment, denotes a speedy delivery from the disease; and the same thing is indicated by thin urine containing undivided fatty matter." Coac. 575. "That urine which is somewhat red, and has a reddish and smooth sediment, if it appears before the seventh day, indicates that the solution will occur on the seventh day; but if after the seventh, it denotes a slow and lingering disease." Coac. 575. "That which, on the fourth day, contains a reddish cloud, *cæteris paribus*, brings alleviation on the seventh." Ibid. "When persons labour under acute fever, the body's remaining stationary, and becoming diminished, or its wasting too fast, is a bad symptom; for the former indicates continuance of the disease, and the latter too great debility." Aph. 28. sect. ii. "Abscesses which are not removed by the first critical evacuations, denote duration of the complaint." Aph. 51. sect. iv. "Sweats breaking out beyond the critical days, denote a laborious long-continued disease, and relapses." Aph. 36. sect. iv. "The supervening of sweat, without remission of the fever, is unfavourable. For the disease is prolonged, and it is an indication of too much humidity." Aph. 56. sect. iv. "The sediment of the urine in fevers becoming similar to thick flour, indicates long-continued weakness." Aph. 31. sect. vii. Long continuance of fever is indicated likewise by pains proceeding from swellings of the glands, ceasing of the crisis, arising from the violence of the pains: instances of which are to be met with in Coac. 73, 75.

With regard to the favourable symptoms, the following aphorisms may be consulted, 26. sect. ii. 43. sect. iv. 62. sect. vii. 36. sect. iv. 69. sect. v. "Such as are to recover from the disease breathe easily, are free from pain, sleep at night, and have other very safe symptoms." *Prænot.* 126. "Jaundice supervening on the 7th, 9th, 11th, or 14th day, is a favourable sign: unless the right hypochondre is hard, it is otherwise a bad symptom." *Aph.* 64. sect. iv. "When deafness occurs in fever, a hemorrhage from the nose, or looseness of the belly, puts an end to the disease." *Aph.* 60. sect. iv. But the following circumstances denote danger: "Black stools, like black blood, passing involuntarily." *Aph.* 21. sect. iv. "Great heat about the belly, and pain at the pit of the stomach." *Aph.* 65. sect. iv. "Alarms or convulsions during sleep." *Aph.* 67. sect. iv. "Broken respiration, as indicating convulsion." *Aph.* 68. sect. iv. See also *Prædict.* 1. 56. 74. *Coac.* 31. 2. 30. 34. 42. 44. 55. 78. 145. 242.

A fatal termination may be conjectured from the occurrences that follow: "The sudden coming on of a sense of suffocation, while there is no tumor on the throat." *Aph.* 34. sect. iv. "The neck's suddenly becoming inverted, and the patient being scarcely able to swallow, while there is no tumor." *Aph.* 35. sect. iv. 58. sect. vii. *Coac.* 277. "The coming on of livid spots." *Coac.* 66. "At the beginning of fever black bile being passed upwards or downwards." *Coac.* 68. "Pustules appearing all over the body in continued fevers, unless some purulent matter comes off. In these, however, tubercles arise principally about the ears." *Coac.* 114. "Defect of the voice, putting on the appearance of convulsion, and terminating in emotion of the mind and silence." *Coac.* 248. There are many different symptoms indicating relapses, but these are the chief. "It is apt to return, unless the fever ceases on one of the odd days." *Aph.* 61. sect. iv. *Coac.* 80. "When fever disappears without being attended with any of the symptoms of solution, and not on the critical days, it is liable

to a relapse." Prænot. 138. Coac. 146. See the symptoms of approaching abscess in Coac. 143. Prænot. 139. Coac. 422. 141. Aph. 31. iv. Of convulsion, in Prænot. 1. 115. Of pain in the head, Aph. 70. sect. iv. Of pain in the thighs, Coac. 297. Of diarrhoea, Aph. 73. sect. iv. Coac. 291. aph. 27. sect. iv. Coac. 153. 142. Of dysentery, Coac. 200. Of hemorrhage, Coac. 168. 149. 142. 555. Prædict. 1. 142. Coac. 298. Of phrenitis, Coac. 79. 95. 228. Of vomiting, Coac. 142. &c.

42. The physician, therefore, Precepts by which the motions of nature should be regulated or excited. should guard against the febrile motion becoming either excessive or deficient. If it be moderate, it ought to be suffered to remain so; if it be torpid, or abate at an improper time, it ought to be excited, according as the vital powers and state of the disease seem to require. In this nice regulation of the febrile motion, almost the entire skill of the practitioner consists; an excellence to be attained only by the attentive and frequent observation of the salutary motions of Nature, and those of an opposite kind: for Nature frequently employs these to get rid of many diseases. The physician, therefore, ought to imitate her, either by lying by while she requires no assistance, or by gently exciting fever, when the motions are too languid, and require being called forth. The nature of some tumors, and the theory of suppuration, shew that moderate inflammation, and of course fever, is often useful and necessary,

It is also not unfrequently necessary in wounds, abscesses, and such like diseases. But it will evidently be found much more serviceable in chronic disorders, in which, on account of the sluggishness and lingering of the morbid matter, quickened motions of the blood, whether from an internal or external cause, prove so salutary.

43. Above all it is necessary to consider the manifest and predisposing causes. For, according to the variety of these, either vomiting or looseness should be excited, or when nature is too languid, sweat, or some other evacuation, should be promoted. But, while the physician attempts these, he ought always carefully to keep in view the strength of the patient, the season of the year, the malignity and the nature of the disease. For we thus may best guard against forces of the *primæ viæ*, and depravation of the fluids of the whole system. But if plethora seem to give origin to fever, it must be immediately removed by blood-letting.

What the predisposing causes require.

When purging is to be employed.

When bleeding should be used.

44. On the other hand, when the pulse is quick, or slow, and at the same time weak; or small, low, and depressed, while the strength is much exhausted; it then ought to be raised by soups, by restorative and cordial medicines, sometimes even by

What is indicated by the state of the pulse.

calafacient remedies, as wine, which not unfrequently proves highly serviceable. But if there be very violent heat, with a strong pulse, as may be feared from the excessive motion of the blood, the best preventive against the viscera becoming too much distended, or the minute vessels bursting, is venesection. It is proper, however, to observe, that the pulse is sometimes obscure, small, and low, on account of the excessive fullness of the vessels blunting the force of the heart and arteries; or from a spasmodic affection of the fibres, which, especially at the beginning, is scarcely ever absent. When that happens, and the patient's age, temperament, habit of body, and former way of life, concur in pointing out abundance of good blood; in that case it is not only perfectly safe to draw blood, without regard to the pulse, but even by doing so the force of the heart and arteries may be roused and the spasms relaxed. With respect to the quantity of blood to be taken, that must be regulated by the patient's age and temperament, and the symptoms of plethora present.

Cautions with regard to bleeding.

45. Sometimes it ought to be drawn very largely; and if the causes and violence of the symptoms, and their continuance, require it, it ought to be repeated again and again. Generally it is the best plan to draw blood early, provided it be

not done at the very commencement of the accession, nor during the cold stage; for in that case it would be extremely hazardous; although, such is the temerity of modern practitioners, there are at this day persons who would not hesitate about having recourse to bleeding at once. But if it has either been neglected at the beginning, or the disease grows worse, or what it was not proper to do at first, becomes both proper and necessary to be done, it is advantageously employed even in the greatest vigor; when otherwise, according to Hippocrates, it is best for the practitioner to remain inactive.

46. Under this head come all those remedies, which, when we were treating of inflammation *, we recommended to allay the excessive violence of fever. Nor must we altogether omit the remedies called anodynes, and those prepared from opium. For by means of them excessive sensibility of the nerves is blunted, the spasms † are relaxed, and the perspiration called forth ‡. But none of the calefacient remedies, or such as are commonly added to opium, to correct or prevent its narcotic effects, should be employed. But before having recourse to these remedies, the vessels should be emptied, and the *primæ viæ* evacuated. They ought, however, to be used in small doses and at different

Remedies allaying the violence of symptoms.

Some observations on using opium.

times, that the febrile motions, which are often necessary, may not be suppressed before the proper time, or the nervous force or irritability too much weakened ||. But, in every case where inflammation of the brain is suspected to be present, it is necessary to beware against such remedies, not so much from the apprehension of increasing the inflammation, as lest, by stupifying the senses, the disease spreading, as it were secretly, should almost wrest out of the physician's hand, or render superfluous, the arms by which it ought to be opposed, or at least throw him off his guard, by inspiring him with too great confidence.

* Com. on. inflamm. n. 68. 69. 70.

† The employment of tartar emetic to excite vomiting is by no means a new thing ; but the using of it sparingly and by *epicrasis*, as they call it, to allay the spasms and promote the diaphoresis, in which way I observe it now to be prescribed, but particularly by the English physicians, is a new thing indeed. Time alone, therefore, can decide whether it is with good reason, or not, that it is extolled by the most celebrated writers. With regard to the diaphoresis, there can exist no kind of dispute. For by the mild power of stimulating and attenuating, which the *epicratic* method of exhibiting the tartar emetic possesses, the force of the circulation is so much increased, and the fluids are so dissolved, that a free cuticular discharge readily follows. That spasms, however, are likewise allayed by such a remedy, if their exciting cause, which had been lodged in the *prima via*, be removed either by vomiting or purging, is not contrary to reason. But I am not much dis-

posed thus to add stimulus to stimulus. Others also recommend these small divided doses of tartar emetic, with the same view; but they prescribe it conjointly with opium, that, after obtunding the acuteness of sensation by means of the opium, its acrimony and irritating power may be blunted; which perhaps is the safer plan. But repeated experiments will shew to which practitioners the greater degree of credit is due.

—*Observe.*—The question concerning the minute and epiratic use of tartar emetic, which I had left in the first edition of this volume to be decided by time, accordingly, very shortly afterwards, was put in a pretty clear point of view. For, at two meetings of the Royal Medical Society, the one held on January the 15th, the other February the 4th, 1782, the celebrated Majault, Morisot, Deslandes, Defessartz, and Tenneurius, brought forward many instances of the bad effects of tartar emetic exhibited in this way. And, in short, all of them learnt by long experience, that this remedy promotes corruption of the fluids, as appeared from the very fetid smell of the feces, which is sensibly perceived on the days when that remedy is employed, and that concoction and the true crisis are impeded by it. Defessartz moreover has added, that after he had desisted from the use of this remedy for fourteen years, he had observed with great pleasure diseases commonly putrid, and likewise malignant ones, terminated more quickly and regularly; and Tenneurius has made the same assertion. In a conversation with my friend and former pupil, Jo. Bapt. Cambieri, a physician of the highest expectations, I was lately informed, that he had perceived the fetid smell, mentioned by the Parisian Academicians, not only in the feces, but likewise in the urine and sweats, when he employed the same remedy; but that he had observed it to be diminished, nay, altogether removed, on the days when it was omitted. Vid. Jour. de Med. T. lvii. p. 274.

‡ To remove the spasm of the capillary vessels, and to promote perspiration, some advise bricks heated in boiling water,

and afterwards wrapped up in thin, fine linen, to be applied to the feet and hands. *See Med. et phil. commentaries by a Society of Gentlemen at Edinburgh*, V. 1. p. 2. c. v. Is this mode preferable to the warm fomentations we use in Italy? On this circumstance also time must decide.

|| I know very well that opium excites the irritability of the heart before allaying the nervous sensibility. For the fact has been proved by such repeated experiments, that no room for doubt remains. Yet experience has discovered nothing more efficacious in allaying spasms. For when the sensation is diminished, stimulating substances and acrimonies are blunted; that is, they can no longer irritate those parts, the sensibility of which is diminished. Perhaps likewise the heart itself, in consequence of the nerves going to it being rendered less sensible, loses somewhat of its irritability.

47. Various kinds of acrimonies and lentor appear from marks peculiar to them, which are pointed out in the pathology and general doctrine of symptoms. But according to the different nature of each, peculiar medicines must be employed to oppose the particular kind of acrimony and lentor. In general, the most proper are diluent, watery drinks, gently resolving, attenuant, opening, but of the milder kind; with which it is very proper to mix acids, both vegetable and mineral, especially if heat is to be moderated, or a tendency to putrefaction prevented. For it appears, that they are both wonderfully refrigerant and antiseptic; whether they produce their ef-

How to remove
various kinds
of acrimony
and lentor.

fect by blunting the sensibility of the nerves, and checking the irritability of the fibres; or by changing and saturating the alkaline volatile salts; or by attracting and uniting with the inflammable principle, or, in other words, the phlogiston; or by condensing the fibres and humours; or in all these ways; is of no great consequence.

48. We should likewise prudently, and in due time, prepare ourselves against the symptoms, in such How we ought to prevent the symptoms. a way, however, as to mitigate and remove only those that are severe and urgent, but not such as neither can, nor ought to be separated from the peculiar nature of fever, and which are usually salutary efforts of nature. But I shall proceed to treat of the method of cure best adapted to each, when I come to speak particularly of each individual kind of fever. Many things, however, have already been treated of in the short Commentary on Inflammation, which might very properly apply here. In the mean time I shall observe, when the belly is bound, that we may administer injections with the utmost safety; that the head-ach is alleviated by the application of cupping-glasses, leeches, and by bathing the feet; the comatose affections, by blisters and cantharides, to excite the bladder, applied to the back of the head, arms, or legs, castor *, spirits of hartshorn, the spiritus succinatus of the same, volatile salt of am-

ber; almost the same remedies, and especially camphor, are of service in the delirium; and the convulsions are relieved, among other things, by musk. But we must not rashly employ all these remedies without discrimination, or attending to all the circumstances and causes. In which respect no one will err who has paid proper attention to the writers on the *Materia Medica*, concerning the powers of remedies, and to the mode of administering them, which exclusively belongs to the province of Therapeutics. For farther information we must rather apply to particular pathology.

* An anonymous English writer entirely rejects castor, saffron, valerian, and contrayerva, in the cure of any fever. He admits the employment of camphor alone as the remedy affording most instantaneous relief to the furious delirium which sometimes occurs in fever. (*Med. Com.* by a Society of Gentlemen in Edinburgh). But neither are the former remedies always hurtful, nor does this on every occasion produce the desired effect,

The evils caused
by retention of
the morb. mat.
& what is then
to be done.

49. But if the morbid matter can neither be altogether corrected, or changed, nor expelled from the system; in consequence of its being retained, it is either deposited somewhere by *metastasis*, and remains there, whence the nature of the fever is often changed, and greater danger arises, (as most frequently happens in eruptive diseases); or it gives rise to chronic complaints of

a different kind. We must therefore cautiously prevent the total suppression of the febrile motion before the cause of the disease has been completely removed, or ejected from the system. Nay, if the fever has remitted prematurely, it should, if possible, again be recalled, that by its action the body may be freed from every noxious fluid ; or by occasionally producing gentle evacuations, and long observing a proper diet, we may prudently prevent the bad consequences which might arise from the imperfect solution of the fever.

50. So far, in few words, concerning the nature and cure of fever in general. But what belongs to each particular species shall be delivered, at greater length, in its proper place. But, before concluding this part of the subject, I think I shall do a service to students by quoting a passage from De Haën*, in which he has made some brief animadversions on the modern plan of treatment, which are excellently calculated to put young physicians on their guard against falling into the same error. " They begin," says he, " and continue " their practice with repeated bleedings ; they " administer repeated vomits ; some purge the " body daily, others every second day ; but in " such a manner that they always add some tar " tar emetic to their apozems, the more effica-

An useful observation of De Haën.

"ciously to move the fluids and stimulate the
 "solids, until at length their pretended symp-
 "toms of the critical pulse arise. We find this
 "practice, which originated in the Chiracian
 "school, and afterwards, as it were, inundated
 "France and the neighbouring countries, in
 "each treatise, both concerning the pulse
 "and the *crisis*†, confirmed and recommend-
 "ed by innumerable testimonies. But I would
 "beg leave to ask those practitioners, in the
 "first place, whether they seriously believe the
 "changes of the pulse, which they discover,
 "to be regular motions of nature, or whether
 "they are not often convinced that they ought
 "to be ascribed to their own improper method
 "of treatment, by which every thing is thrown
 "into confusion? For my own part, at least, I
 "have often experienced, that every change of
 "pulse proceeds either from the mistake of the
 "physician, the patient, or the by-standers. In
 "the second place, I would ask, whether or not,
 "after disturbing and confounding the operations
 "of nature by their preposterous practice, they
 "justly accuse the school of Hippocrates of such
 "amazing falsity and error, in which the very
 "truth of Hippocrates's observations is denied,
 "when the physician has thrown nature into com-
 "plete confusion ‡.

* Rat. Med. P. xii. c. iv. p. 297.

† He alludes in this place to the doctrine concerning the critical and organic pulse, started and most obstinately defended by Bordeu, Fouquet, Michel, and others.

‡ Nobody has more strictly followed the opinions of Hippocrates than De Haën, except the Italian physicians. For such in particular, as have been educated in the school of Bononia, Florence, and Rome, Very useful admonitions. think that nothing is of more consequence than the contemplating of Nature, making themselves acquainted with her motions, co-operating with the salutary ones, preventing such as are hurtful, assisting those that are defective; in one word, acting as her coadjutors, not as her directors. Hence most of them employ a very simple method of treatment, and guard against too great a quantity or farrago of drugs; not that they are ignorant of the *Materia Medica*, of which they are unjustly accused by some, for they are well acquainted with both simples and compounds, and their powers; but because they consider it as improper to disturb the operations of nature, whom they look upon as the true physician; and they are all well aware, that a great many medicines, which are wonderfully extolled by certain transalpine practitioners, for the most part, on trial, by no means answer the expectations formed of them. Instructed by Reditus and Valisnieri, judicious and well-informed physicians, they do not give ear to the tales and wonders every where told them of such medicines; and when a trial of their power is to be made, they conduct themselves with such circumspection and diligence, as to leave no room for error or preconceived opinion. Wherefore, in consequence of being often deceived by the experiments of others, they consult their own experience, and, for the most part, however reluctantly, are forced to return to their former simplicity of practice, which used to be so agreeable to nature. Let students particularly attend to that circumstance, lest they should hereafter find cause to repent of their too great credulity.

OF THE
DIVISION AND DIFFERENCES
OF
F E V E R S.

51. **S**INCE fever is not only a very frequent complaint, but one which puts on such a variety of appearances (2.); physicians of all ages have earnestly endeavoured to attain a knowledge of the nature and differences of each species, and to mark them with precision. The consequence of which has been, that in a short time their number seemed so great, as to render it impossible for any one to describe or arrange them, unless by referring them to certain principal genera, or classes, and also to particular and distinct species. But to pursue the individual divisions of each, would doubtless be the province of a man of profound erudition, and possessed of the leisure requisite for such a task,

which I am very far from being able to command. I shall do my endeavour, however, to make it clearly appear what has been done in this respect by the industry both of the ancients and moderns, and what seems to me to be the merit of their respective labours.

52. The most general division, then, which has been adopted, is taken, either from the danger and rapidity of the disease, or from its cause, or from the number of persons affected in the same place and at the same time, or from its bad disposition. Hence they are usually distinguished into *acute* and *chronic*; into *essential*, whether *primary*, *secondary*, or *symptomatic*; into *epidemic*, *stationary*, *endemic* and *sporadic*; into *malignant* and *benign*; and, if the malignity be very great, and as it were resembles the destructive nature of a plague, they are farther distinguished into *pestilential*. But, since such a division is in every respect applicable to other diseases also, and is not peculiar to fevers, it seems ill calculated either to discriminate or arrange them. Moreover, their celerity, slowness, malignity, benignity, severity, or their epidemic, stationary, endemic, and sporadic disposition, do not indicate a peculiar kind of the disease, but rather a modification, affection, or particular difference, as it were, of the genus. For the acute * and chronic kind extend so far as

The first division
and its faults.

to comprehend a great number of diseases completely different in their nature, quality, symptoms, and variety of terminations. But the addition of the term *malignant*, or *benign*, or *epidemic*, or *stationary*, or *endemic*, or *sporadic*, as also the additional circumstance of its being *primary* or *secondary*, or that of any other similar denomination, neither changes nor constitutes the genus, but, more properly indicates a greater or lesser degree of violence of the disease, its more or less frequent occurrence, predominance, seat, origin, and so forth.

* I daily hear not only the ignorant vulgar, but likewise physicians themselves, misapply this term. As soon as they see a continued fever somewhat more violent than usual, they immediately conceive that the patient labours under an acute fever, as if it were a peculiar genus or species of fever, different in every respect from others; as, for instance, an *ephemera* differs from an *hectic*, *tertian* or *quartan*; a *pleurisy* from an *angina*; an *angina* from an *apoplexy*; an *apoplexy* from a *dropsy*; and so on. But they say, that there is nothing which is not common to most fevers of a severe kind, and which run a quick and dangerous course. For that name is common to a great many diseases, even unaccompanied by fever, and seems rather to be a kind of *collective* term; and when it is applied to fevers, it is not confined to one in particular, but comprehends all those which run their course quickly, and are attended with danger. Thus acute fever, in fact, embraces the *putrid synochus* of the ancients, the *gastric fever* of Ballonius, the *slow nervous fever* of the English, the *tritaphya*, and malignant and pestilential fevers of whatever kind; nay, sometimes even *ephemera* and inter-

mittents, when they are of a fatal nature, and a good many others, of which we shall speak hereafter. But that nomenclature which is attended with least trouble generally makes physicians rest contented with it, without going in quest of what might define the intimate and peculiar nature of fever with more probability. But does such a practice equally contribute to the convenience of the patient? Or is it consistent with the precepts of medicine?

53. And, in fact, an ephemera, synochus, tertian, quotidian, and quartan, are the same in kind, whether they put on the benign or malignant form, or prevail epidemically, endemically, or sporadically; in the same manner as dysentery, pleurisy, catarrh, which, whatever their conditions be, are still the same kind of disease, and retain the same name, whether they be benign or malignant, epidemic or sporadic, of short or long duration. For, from these distinctions of qualities and circumstances, flow certain differences, but not distinct genera. But what is meant by a benign; malignant, epidemic, stationary, endemic, or sporadic disease, we think sufficiently explained in the branch of medical science termed *Pathology*. With regard to malignity, however, all do not equally agree *. Among most physicians now, those fevers are esteemed malignant, which come on in an insidious way, while they put on a benign appearance, quickly waste the strength without any manifest cause, injure

What is meant by the name of malignant fever.

the action of the nerves and heart particularly, and are accompanied with unusual symptoms, not a little foreign and repugnant to the true and simple nature of the disease. For example; whilst the greatest and most unexpected degree of exhaustion both of the vital and animal powers takes place, and the pulse is either very slightly febrile, or next to natural, there is excessive thirst and a sense of burning felt internally: Or, on the contrary, no thirst is felt, while the tongue is dry and parched: Or there is a prostration of strength without any evident cause; the patient is distressed with constant watching; or an uncommon restlessness and tossing, which by no means correspond with the small degree of fever indicated by the pulse, and the apparent slight kind of disease, and so forth †. Some add, that the

Contagious and
putrid fever.

malignancy of fever is propagated by contagion; but this does not invariably happen. There are likewise some who confound malignant with putrid fevers, and establish a particular *genus* of the putrid kind. But the malignant differs from the putrid kind; and as malignity may happen to accompany any fever whatever, so may putridity.

* Almost the whole school of Montpellier, according to the celebrated Le Roy, (*Mélang. de Physiq. et Medicin. p. 232.*) divides all acute fevers, (under which appellation is comprehended the class of severe and rapid *continued fevers*), into be-

sign and *malignant*. There the benign ones are currently said to be unaccompanied with dangerous symptoms, but those of a malignant kind are said to be such as are violent and attended with symptoms of a very bad kind. But these last, because they cannot be said to be truly malignant, and ought therefore to be in some measure distinguished from those which are truly so, are generally *malignant with respect to their symptoms*. But taking malignity in the sense which I have above mentioned, there is scarcely any fever which may not at times be malignant. It is not an uncommon occurrence to fall in with a malignant ephemera, or synochus, a malignant quotidian, tertian or quartan, both intermittent and continued, a malignant and gastric fever, &c. Nor is it a rare thing to meet with any other disease of a malignant nature, such as pleurisy, measles, small-pox, erysipelas, phlegmone, &c. For malignity, as has already been shewn, constitutes the species, not the genus, of a disease. De Haën likewise (*Rat. med. contin. T. 1. c. 2.*) favours this very opinion as founded upon truth, although he may perhaps afterwards seem to extend it somewhat farther than is proper. (*Ib. c. 3.*)

† There are, therefore, certain symptoms as it were peculiar to malignant fevers and malignant diseases, by which they are distinguished; particularly sudden and unexpected falling of the strength, and the symptoms much more violent than they usually are in a similar affection, deserve notice. But in malignant diseases, not only are the animal, but also the vital powers weakened; which is indicated by languor of the whole body, a propensity to frequent fainting, the pulse soon becoming very weak, or being so from the beginning, or quickly growing languid, or even the quick and unexpected appearance of the approach of death. The following observations of Hamilton apply very well to the present subject: "There are some," he observes, "who are of opinion, that pestilential and petechial fevers alone ought to be reckoned among the malignant ones. I think, however, that others also, different

" in species, should be referred to the class of malignant fevers.
 " In the first place, whatever fevers are transferred from one per-
 " son to another by contact, the breath, or any other mode of
 " contagion; in the next place, such as even from the very be-
 " ginning are accompanied by violent and fixed pain, in the
 " head, or region of the intestines or kidneys, or even the
 " joints, as if the patient primarily laboured under cephalal-
 " gia, colic, nephritis or gout, or rheumatism, or child labour;
 " while, however, these symptoms will not yield to such reme-
 " dies as are usually efficacious when the diseases are primary."
 (The author often saw that occur in the miliary fever; but I
 have observed it more than once in the malignant miliary fe-
 ver, in the worst kind of small-pox, and in other pernicious
 diseases). " Moreover, those in which the animal spirits sud-
 " denly fail, and where the symptoms already enumerated
 " seem to depend upon no evident cause, but upon some la-
 " tent hurtful power, by the ancients distinguished by the
 " name of a hidden quality, and by the moderns referred to
 " miasmata. Or lastly, when from a cause which appears
 " not to be of a different nature, sudden death succeeds fa-
 " vourable expectations of the event. All which things
 " ----- are indicative of malignity." *De Prax.*
Regul. et Febr. miliar. p. 46. So far in general of the marks
 of malignity. But, as we learn from Sennert, Riverius, Syl-
 vius and others, the particular signs of malignant fevers, the
 diagnosis in which is of very great moment, are the following:
 Slight shivering precedes, which is succeeded by heat, seldom
 violent, oftener mild. The urine for the most part differs little
 or nothing from that of persons in good health. The pulse is
 frequent indeed, but at the same time small and weak, and in
 many respects irregular; sometimes it is intermitting or defi-
 cient, sometimes it is slower than usual, and like the natural
 pulse. Very often coma, more rarely watching, occur. Fre-
 quently uneasy dreams, restlessness, cardialgia, nausea, like-
 wise vomiting, distress the patient, together with the headach;

sometimes delirium or vertigo, a greater degree of thirst than the heat of the body or fauces would seem to indicate. The limbs feel tired, as it were, and broken. Bilious and fetid looseness of the belly is superadded to these symptoms. Blood trickles from the nose or uterus, sometimes it is discharged in great abundance. The blood appears thin, and, for the most part, is incapable of being coagulated. Various appearances of spots and vesicles take place on the skin; at times tremors, starting of the tendons, and convulsive motions occur, generally accompanied with swellings of the glands and alternate cold and heat of the extremities; the sweats are either excessive, frequently they are symptomatic and useless, or they are sometimes altogether absent. The celebrated Van Swieten (upon Boerhaave § 950.) briefly enumerates the marks of malignant fevers; namely the immediate loss of strength, a milder degree of heat than usual, frequently coldness of the extremities, great anxiety, a very quick, weak, and extremely irregular pulse, sometimes scarcely to be perceived by the touch, for the most part no thirst. Nor are the symptoms of malignant fevers enumerated by Scardona (*De Febr. c. 1. § vi.*) very different from those mentioned above; viz. weakness from the beginning; universal languor, with weak, small, and as it were, deficient pulse: a mild degree of heat to the touch; the urine like that of persons in good health, together with a certain very deceptive appearance of benign fever, which is very apt to deceive both the patient and the physician himself; in the progress of the disease, intense heat, rather internally than externally, little thirst, anxiety; watching, delirium, convulsion, lethargy; during its increase, and while it is stationary, immobility of the body, the skin's being marked with various coloured spots, profuse sweats, diarrhoea, hemorrhagy, &c. The celebrated Le Roy, although he seems to entertain another opinion concerning the malignity of fevers, as we have already said, yet is obliged to confess that there is a considerable number of symptoms indicating malignant fevers, but that

sometimes one set, sometimes another occurs; nay, that at first such fevers are sometimes so obscure as to be scarcely discernible; but he says that the more frequent and certain symptoms are, unusual and sudden loss of strength, a truly weak pulse, which affords no resistance to the touch, and is at the same time irregular; nausea; obstinate vomiting, ferous, bilious and very thin stools. To these, he says, moreover, may be added the swollen face, deafness from the beginning, and comatose affections. (Melang. cit. p. 169. 170.) With most he supposes, that when proceeding from a general cause they become *epidemic*, and when from a *particular* one they become *sporadic* and confined. That such a cause is denominated a *poison*. That they are sometimes contagious, sometimes not. That if they rage epidemically and carry off a great number, and are attended with buboes, or carbuncles, and gangrene, being more violent in degree, and in some measure resembling the plague, they are called *pestilential*, among which the highest degree of violence is esteemed the plague, although at present the true plague is usually excluded from the class of fevers. Some reckon the *pestilential* and *malignant* fever one and the same thing; but they may be conveniently distinguished by the degree of violence with which each is attended. These observations concerning the diagnosis of malignant fevers may seem more full than was requisite; but I was more particular at present with the view that, when mention shall be made of them hereafter, (which will repeatedly be done), every one may at once perceive what is to be understood by the term *malignity* and malignant fevers.

54. Nor are fevers with more propriety divided into *ophthalmic*, *anginous*, *phrenitic*, *peripneumonic*, *pleuritic*, *arthritic*, and others, derived from inflammations of particular parts. For, since the primary disease is not fever, but actual inflam-

Other nugatory divisions.

mation, it is improper to class these under the head Fevers; a circumstance to which the older physicians paid due attention, when they esteemed it better to style such kind of complaints by the name of ophthalmia, angina, pleurisy, peripneumony, gout, and so forth. But if Sydenham sometimes thought proper to denominate certain fevers pleuritic, peripneumonic, dysenteric, all that we are to understand by it is, that he has employed these terms differently from the manner in which they are usually received. For, during the prevalence of the three last-mentioned diseases epidemically, as he frequently observed fevers occasionally intervening or succeeding them, which required the same method of treatment as these diseases, although they were neither accompanied nor produced by pleurisy, peripneumony, nor dysentery, he thought that they should be denominated pleuritic, peripneumonic, dysenteric, to point out their peculiar nature as partaking of the universal or stationary disease.

55. We must object equally to the practice of the ancients, and some of the physicians of our own time, who have increased the different kinds and number of fevers from some peculiar predominant symptom. For who does not know that any remarkable symptom alters the degree, or forms a variety of the

Fevers named
from their
symptoms
should be
expunged
from the class
of fevers.

fever, but does not constitute the fever itself, nor the genus, and sometimes not even the species? It seems proper, therefore, to expunge from the number of genera and species, the *epiala* of Hippocrates *, in which cold prevails with constant rigor, and also that of Galen †, in which the patients feel both hot and cold at the same time, although the external parts, according to De Haën ‡, shew a degree of heat greater than usual. From which symptom such fevers are likewise denominated *borrifica*. Let us banish also the *lipyria*, in which the extremities and external parts are cold, whilst the internal parts are affected with a sense of burning heat; the *affodes*, which is characterised by excessive nausea and perpetual restlessness; the *typhodes*, which is conjoined with extreme heat and stupor; the *causus*, or ardent fever ||, in which intolerable heat and unextinguishable thirst are the distressing symptoms; the *elodes*, or *sudorifica*, so denominated from the perpetual sweats attending it; the *phricodes*, in which, during the prevalence of the heat, sudden cold comes on; the *lyngodes*, i. e. *singultuosa*, named so from the hiccup attending it, and so forth §.

* Epid. vi. p. 1127. edit. Foëssii.

† De febr. different. cap. v.

‡ Rat. med. P. ii. p. 165.

|| Hippocrates mentions the *causus*, or ardent fever, (lib. 3.

epid. sect. 3. Hist. i.), in the opinion of the celebrated Le Roy, as a peculiarly violent degree of fever, not as any peculiar fever, distinct in kind. For he seems to have employed this term in a very vague manner, to signify the most violent and fatal kind of fevers. But it gradually happened, that most people denominated these fevers ardent, which are accompanied by the most violent and scorching degree of heat, and unquenchable thirst. (Memoir. 2. sur les feivr. aigües, p. 232. et seq.). On this account Le Roy is of opinion, that the prognostics of Hippocrates, with regard to ardent fevers, must be understood as applying to any acute fever, and not to a peculiar species, which he had neither presumed nor pointed out. Some passages, however, are to be found in the works of Hippocrates, which seem to indicate,¹ that under this name he sometimes described a peculiar kind of acute fever, as I shall shew in a note upon par. 419.

§ Of these, without doubt, the celebrated Quarin justly speaks, when he observes: "A great many divisions of fevers are to be found in the works of different authors; but it is affirmed by Freind, that the symptoms of diseases are often cured for the diseases themselves, and that, therefore, more diseases than really exist are reckoned upon by certain writers. And Tissot observes, that the progress of medicine is retarded by an immense catalogue of fevers, whilst the number of actual diseases is by no means increased." De medend. febrib. cap. 1. p. 4.

56. The distinction of fevers by some, into *exanthematic* and *non-exanthematic*, is equally reprehensible; as it improperly reckons among the number of fevers, diseases which by no means belong to them; or symptoms of fevers,

The division into exanthematic fevers rejected.

and accidental circumstances, are received as so many different kinds of fevers; whence it happens, that the number of fevers is extended beyond the bounds of nature. For the exanthematous diseases are either primary or essential, or they are secondary. To the first kind are universally referred, small-pox, measles, scarlet fever, the nettle-rash, sometimes the miliary fever, petechial fever, generally erysipelas, and other exanthematic complaints, which are sometimes only preceded by fever, sometimes also accompanied by it, at other times neither preceded nor accompanied. Nay, it sometimes happens, that on the eruption's taking place, the fever, if any had preceded, entirely disappears, and nevertheless the exanthematous or primary disease continues, and, according to its nature, proceeds to a termination. Such diseases, although for the most part febrile, are excluded by prudent practitioners and skilful nosologists from the class of fevers, and with the greatest propriety. But, with regard to the secondary exanthemata; these in my opinion, ought to be distinguished into critical, symptomatic, and into those that supervene upon others, according as they either alleviate and remove the disease to which they succeed, or neither alleviate nor remove it, or render it worse, or are complicated as a new disorder with a former complaint; as, for instance, when the small-pox,

measles, or the miliary fever, are combined with puerperal or any other fever. But primary exanthematic diseases can be called neither critical nor symptomatic, with propriety ; because, otherwise, a critical and symptomatic disease would be one and the same thing, which involves a contradiction : but they are more properly denominated benign, regular, or malignant and anomalous ; while it suits the secondary ones alone to be called critical or symptomatic. If, therefore, the primary exanthematous diseases are to be separated from the class of fevers, how much less do the secondary ones, as the petechial and miliary fever, which are merely casualties of fevers, deserve to be ranked under that head ? For it is a circumstance which is well ascertained, that the petechial and miliary fever, and other exanthematous diseases, occasionally supervene upon fevers of whatever kind, both continued and remittent, as well as those which have an intermission, and that they cause certain degrees, complications, or differences of these, without at all altering the nature of the fever. They may, therefore, be in common to almost each fever, but will never occasion any peculiar kind, and much less a class, which is usually constituted by various kinds possessing a fixed and invariable character in common to them all. But the exanthemata being of a variable and uncertain nature, and some-

times present sometimes absent, cannot afford a common mark of this kind, by which they may be referred to fever. Otherwise one and the same sort of diseases would come under the head of each class.

* Had the physicians of Vienna attended to such distinctions, founded on the observation of nature, and not employed the words *critical* and *symptomatical*, in an improper sense; no dispute, concerning the propriety of naming the exanthemata, when they supervene on fever, *critical* or *symptomatical*,—which must otherwise remain undecided,—would have arisen.

57. Nor are we to esteem as peculiar genera or species of fevers, those which Hippocrates * has named *mordaces*, in which the heat of the patient's hand is of a *pricking* or *pungent* kind †; or such as have received the appellation of *mild*, in which the degree of heat is less, and not so pricking and sharp. For it must be obvious to every one, that the variety is occasioned solely by the difference in the degree of heat; for all are agreed, that difference of the quantity alone, neither changes nor constitutes a genus nor species. The same thing, I think, may be said of those fevers which are called by the father of medicine, *increfcentes*, *acutæ*, *ardent*, *rubicundæ valde*, *præpallidæ*, *lividæ*, &c. For as the three former indi-

† This expression must appear very uncouth to an English ear; but it seemed impossible to translate otherwise the words of the original, *in quibus calor mordet et pungit*. T.

cate only the degree of intensity and magnitude of the disease, so do the latter express the variety of heat alone. With respect to fever, however, neither its magnitude, nor intensity, nor the variety of heat accompanying it, should affect its genus.

* Epid. l. vi.

58. Galen was of opinion, that the *essential* differences of fevers were to be derived from the cause of the morbid heat, whence he imagined fevers to arise. But it is objected to him by some, that he seems to lose sight of the heat, in the preternatural increase of which he had made the essence of fever to consist. (4.) After enumerating the differences of fever, however, to be derived, according to Hippocrates, from heat, he seems sufficiently to exculpate himself in the following words. "The differences of heat are taken both from that which may admit a greater or lesser proportion, and from the matter itself in which the preternatural heat exists, and from the manner of motion *." And he immediately afterwards observes: "But the differences, which are taken from the matter, in which the preternatural heat consists, principally belong to the difference of preternatural heat: whether it seizes on the body of the heart itself, or the fluids con-

Differences according to Galen.

tained in its ventricles." Hence all who have followed his footsteps, have divided the whole multitude of fevers into ephemeræ, hecticæ, and humoral fevers; deriving the former from preternatural heat of the *spirits*, (probably the *nervous influence*), the second set from that of the solids, and the last from putrescency of the fluids. They have therefore in general denominated these last likewise *putrid*. Moreover, in these they thought, that the heat proceeded from the putrefaction corrupting not the whole fluids indeed, but only a part. For they were well aware, that absolute putrefaction, either in the solids or fluids, is incompatible with life.

* De differ. febr. l. 1. c. 4. text. 4.

† Galen (De diff. febr. l. 2. c. 9.) taught, that ephemeræ arose neither from the blood being in a state of putrescency nor putrefaction, but only from its being warmed; that thus the *spirits* are warmed, and an ephemera was produced.

59. And, as in the *humoral* fevers, the causes of the heat are various, in proportion to the number of the fluids; they have formed different divisions, according to the diversity of putrid causes. Thus they affirmed, that from putrescency of the blood arose *synocha* or *synochus*; from that of the bile *tertian* intermittent, continued fe-

The differences
taken from pu-
trescency of a
peculiar fluid.

ver, and that named *causus* ; from the phlegm being salt, acid, and vitreous, *epiala* ; from its being in a state of insipidity, *quotidian*, both of the continued and intermittent kind ; from black bile *quartan* fever, and that called *tetartophya* ; and, lastly, that from the bile and phlegm being mixed together, arose the *hemitritæus* or *semitertian* *. But whoever takes the trouble to weigh the matter, will readily perceive, that, by their own confession, the putrefaction in such fevers is not so great as to be capable of exciting febrile heat, which is sometimes so excessive, that it can by no means be said to be derived from that cause : In the next place, it will appear altogether an hypothetical fiction to suppose, that sometimes the spirits, (nervous influence), sometimes the whole body, is heated ; or that either this or that particular humor becomes putrid, and by its putrefaction excites this or that particular kind of fever. Lastly, that no manner of connection subsists between the phlegm, for instance, and a quotidian, between the black bile and a quartan, &c. even though we should admit that those four fluids, such as the Galenists have supposed to exist in the blood and living body, really did exist. Besides, why is one and the same intermitting fever so variously changed, that at one time a quotidian is converted into a tertian, presently into a quartan ; at another, a tertian or quartan into a quo-

tidian ? and why does it undergo repeated changes of that kind, if only one humor were assigned to each kind of fever ? Moreover, what humor will they assign to the quintanæ, sextanæ, septanæ, octanæ, and others having still longer intervals ? To avoid the objection, will they, with Galen, dare to call them in question ? But they are opposed by the innumerable testimonies of writers worthy of every degree of credit, particularly by the authority of Morgagni, in point of perspicuity and nicety of discrimination, in the highest repute ; as will be shewn (64.) hereafter.

* Galen (De diff. febr. l. 1. c. 5.) says, that it is an ancient opinion, *that every fever consists in a putrid state of the fluids ;* and that the successors of Atheneus, men by no means of obscure character, are of this opinion. But he excepts the diarrææ or ephemeræ.

60. For which reason, laying aside such divisions and differences of fevers, and passing over a good many others *, which, although they be started by very approved authors, do not seem more worthy of approbation than those already mentioned ; I shall proceed to such as I consider more deserving of notice, without farther delay. But the divisions, of which I approve, are such as are taken from a close observation of nature, and are attended with certain unequivocal marks, which are observable, upon the first examination,

Differences
which are more
consistent with
reason.

and are obvious to the senses †. For if they should be sought from our observation of the symptoms, as some would have it, they will not appear till the disease is far advanced; because frequently those symptoms, by which our judgment would be regulated, do not shew themselves immediately at the commencement of the disease. And indeed it was among the first discoveries, that all fevers whatever either continue without intermission during their whole course, or occasionally experience a cessation of fever for some time. The former are denominated by Celsus *affiduae*, by the moderns *continued*; the latter *intermittents*. Therefore, the first and most general division of all fevers will be into *continued* and *intermitting* ‡.

* An anonymous writer, in a treatise on the general cure of fevers, divides them into *inflammatory*, *intermitting*, and *nervous*. But next rejecting *inflammatory* fevers, as symptomatic, he retains only the two remaining kinds, viz. the *intermittent* and *nervous* fevers; under the first of which he comprehends also *remittents*. But real and primary *remittents*, as far as I can judge, are improperly comprehended under the head of *intermittents*, because, as Gorter (Camp. med. tract. 52.) has justly observed, they differ entirely in their nature, cause and method of cure, from *intermittents*; which will be seen hereafter. But the genus of *nervous* fevers extends so far, that, according to it, every fever, which is not an *intermitting* one, may be esteemed *nervous*. In which respect, how far he departs from the truth, every one will perceive from what is to follow, unless he contends that all fevers are *nervous*, because the

nerves in them are affected ; but, in that case, intermittents must necessarily be added to the number. Besides, the same anonymous author excludes all *continued* fevers, which is by no means allowed by others, nor indeed can it, as will be seen in its proper place. (Med. com. by a Soc. of Gentlemen, Edinburgh). I see likewise fevers by some divided into *intermittents*, *inflammatory*, and *putrid*, and such as are compounded of these. But there are many fevers, which are neither really intermittent, nor inflammatory, nor putrid, at least in the sense now usually attached to those terms. How, then, will they dispose of such as these ?

† Some are for dividing fevers according to their *essence*, or *causes*. But the *essence* and *efficient cause* of fevers, is not the same in all ; and it varies as the hypothetical systems of physicians vary. When, therefore, such divisions favour of hypothesis, they rest upon very uncertain and doubtful foundations, and give occasion to many errors. For Tode, a man of learning in other respects, and of distinguished character, (Spec. inaug. de dup. febr. indole. Hafniæ, 1769. p. 19. et seq.), commends the division taken from the causes and method of treatment, which most of the British physicians, as Gregory, Home, Whytt, Huxham, Fordyce, Brocklesby, Pringle, and others have adopted. But the causes, especially the internal ones, which they understand in this case, generally either lie altogether concealed, as I already observed, or are obscure, doubtful or hypothetical. But if, as sometimes happens, they can ever be known, while the external ones lead the way, these will rather occasion differences of genera and species, than constitute the principal heads, and thus the knowledge of them will tend to direct the cure. Nor can we approve more of the division of fevers very lately published by Joannes Veisz, in his *Tentamen inaugurale Pyretologiae practica Vienn. 1780. into inflammatory, bilious, pituitous, variculous, measles, intermittent, &c.* because it is too hypothetical and fallacious, as being in a great measure taken from causes. Moreover, small-pox, measles,

and other exanthematic febrile diseases, are improperly referred to the class of fevers.

‡ Formerly intermittents, from the time of year when they prevailed, were divided into *vernal* and *autumnal*, a practice which was observed by the majority after Sydenham, and still is followed to this day. But at present likewise continued fevers, according to the time of their prevalence, are currently divided into *vernal*, *summer*, *autumnal* and *winter* ones; not, in my opinion, because those same, which, at one season of the year, are *ephemera*, *synochi*, or *gastric* fevers, or such as are called *Tritæophye*, in another season acquire a different nature, and are *essentially* distinguished, for they are always the same; but because they undergo small varieties, both from manifest causes by which they seem to be produced, and from the manner in which their solution is effected. Hence to every kind is applied the epithet denoting the season of the year, to distinguish it from other diseases of the same kind, but appearing at a different time. Thus Pringle, for instance, distinguishes a certain fever, which, from its cause he calls *bilious*, by naming it from its time of prevailing, *summer* or *autumnal*, *remittent*; because of its attacking people in summer or autumn, and so forth. It has been observed in fact, that those fevers, which attack men in the spring-time, are generally, though by no means invariably, conjoined with inflammatory diathesis of the blood: That those occurring in the summer-time, are combined with a depraved state of the bile, or arise from it, and have rather a putrid tendency: That the autumnal fevers are occasioned both by yellow and black bile; and that those of winter more frequently assume the nature of catarrhal or rheumatic ones. For which reason Grant (*Rech. sur les fev.*) thinks that *vernal* fevers are uniformly *inflammatory*, those of *summer*, *bilious*, those of *autumn*, *atrabilious*, or produced by black bile, and those of *winter*, *pituitous*. But this division, taken from the four fictitious humors of the ancients, is neither safe, nor free from fallacy. Add to this, that the winter

fevers were esteemed by Pringle not *pituitous*, but *inflammatory* and *sanguinous*, and treated as such.

61. But as the motion of continued fevers in some is equable, and almost uniform, but in others unequal, and sometimes prevalent, at others subsiding at certain intervals, so that some seem to be almost continued, and to observe the same motion without interruption, throughout their whole course; while others, although they have no intermission, yet, at stated times, experience a remission, and again become aggravated, as if they consisted of several manifestly distinct courses*: it follows, that, according to what Nature points out, continued fevers, for the sake of perspicuity, should still be divided into *simple continued fevers*, or those of one course, and into *remittent*, or such as consist of several distinct courses, without any intermission, or into compound ones. The former are usually called *continent*†, in a particular manner, likewise *conclusæ* by us, by the Greeks *synochi*; the latter *remittent*, or *synochæ*.

* Galen (De diff. Febr. l. 2. c. 2.) observes: "But, there are two kinds of continued fevers proceeding from yellow bile: one of those, which are called *synochi*, that is, continent fevers, of which there is uniformly an uninterrupted paroxysm from the beginning to the end. Another of those fevers, which are called continued, and consist of many particular courses.

† But the uniformity of continued fevers is such, that, according to the various stages of their course, they are not free from the vicissitudes to which other acute diseases are subject. For in the beginning they are milder, they are aggravated in their progress, then they continue at nearly the same degree, at length a gradual inclination and diminution of their violence take place, till lastly, they subside altogether. Sometimes they perform their course in a different manner. For they either remain almost at the same degree, or they always go on increasing, or after the first attack they grow milder until they daily disappear; which the ancients say, happens principally when they are of short duration. But, in whatever way they have proceeded, they say that they generally consist of one accession. Although some celebrated physicians, and among the rest Cullen, (Gener. morb. cl. 1. ord. 1. sect. 1.), an anonymous English writer (Med. et phil. com. by a Society of Gentlemen, Edinburgh), Brendelius (*De Febr. Partic.* § v.), and others deny the existence of *continent* fevers. After the example of Galen, however, we not only suppose their existence, but firmly contend for it. But in what manner this word should be received, and what *continuity* should be attributed to them, we shall mention when we come to speak of this part of the subject hereafter.

62. But the accessions, and courses of which *remittents* consist, either return at certain stated hours, or days, or at vague and irregular periods. In the first case, they are called *periodical continued fevers*, and according as the exacerbation takes place every day, every second or fourth day, they are named *quotidian*, *tertian*, or *quar-tan continued fevers*; in the second case, they

Different kinds
of remittents.

are denominated *erraticæ*, (vague or wandering). *Intermittents* also, according as they undergo their changes with regular accessions, or vague ones, and without any type or order, are styled in the same manner. Hence, (60. 61.), as it were spontaneously flow those three principal divisions of fevers, namely *continent*, ^{Differences of intermittents.} *remittent*, and *intermittent* fevers, which not only the ancients, but also the moderns, have now recognised from their particular experience *. But I shall more carefully and distinctly treat, in its proper place, of every kind and species belonging to each of them. It is proper that a fourth difference should be added to these three, comprehending those called *compositæ*, or likewise named *proportionatæ*, or *complexæ*, or *complicatæ*. For it is an observation frequently made by physicians in the course of their practice, that certain fevers very often occur composed of continued fevers and intermittents, or of simple continued fevers and remittents variously combined. In the fourth place, therefore, I shall proceed to enlarge on them, together with their principal differences.

* Among the moderns, Jensen. de Haën, Sauvages, Linnæus, Vogel, and not a few of our own countrymen, deserve not to rank last.

63. Thus the whole class of fevers is very

conveniently divided by Nature herself into four parts in all. But since the manner of the order in which the subject is treated, is attended with very great utility, and is frequently also an assistance to learners, I shall begin first with *intermittents*, then proceed to *continent fevers*; from these I shall go on to *remittents*; and lastly, to complete the subject, I shall speak of the *compound* ones. For I think that this arrangement is better adapted to the use of beginners than any other, as it marks the gradations, and, as it were, leads them from the more simple and usual kinds of fevers, to the more complex, obscure, and such as are less perfectly understood. Doubtless, if a person attentively considers apart each accession of an intermitting fever, and the more manifest stages, namely, its commencement, progress, and remission, he would acquire a perfect view of the shortest and most simple fever. Next, let him turn his attention to *continent* fevers, which consist of an uninterrupted paroxysm, and he will perceive between each the greatest affinity in their attack and progress, with this difference only, that in the continent fevers the periods of the accession, namely the commencement, increase, and remission, are lengthened out not to a few hours, but to several days and weeks; nor does the fever, when it has arrived at its termi-

The order in which all the fevers are to be explained.

nation, like an intermittent, return at stated periods. After observing these things, if he form to himself the idea of the accessions of an intermittent approaching each other, becoming contiguous and united, it will most conveniently lead him to an intimate acquaintance with the nature of *remittents*. Nor will it require great labour for him to understand the combinations formed by these three kinds of fevers.

PART I.

OF

INTERMITTING FEVERS.

64. **W**HEN fever comes and goes in such a manner, that a true and perfect intermission is left between each accession, it then, as has been said (60.), receives the name of an intermitting fever. But there are various kinds of intermittents, derived from the variety of the type, or order, of the paroxysms and intermissions. For if the accessions occur daily, and correspond with each other, in time, degree, and duration, they occasion a *quotidian*; if only on each alternate day, a *tertian*; if on every fourth day, a *quartan*. These principal and more usual

Various kinds of
intermittents.

kinds of fevers require a particular and separate discussion. There are instances, however, of *quintanæ*, *sextanæ*, *septanæ*, *oetanæ*, *nonanæ*, and others, with still longer intervals. Although Galen*, besides a *quintan*, and indeed an obscure one, never saw another; and Werlhoff†, and Senac‡, seem inclined to think, that these are either *erratic* fevers, or are to be referred to the *tertians* and *quartans*, any accession of which may be deficient and intermit; from the circumstance, perhaps, that they did not see in what manner they could be accommodated to their hypothetical explanation of the different types||. But, as Morgagni has justly observed§, fevers *having longer intervals than usual*, though they often succeed to *quartans*, are not on that account to be classed with *quartans*, whose intervals have been rendered longer, unless, contrary to what has been already determined upon, *we would in like manner esteem quartans, when they succeed to tertians, as tertians whose returns have been rendered slower.*

* De diff. febr. l. i. c. v. sub fin.

† Observat. de febr. sect. vi. § iv.

‡ De recondit. febr. intermit. et remit. natura, l. i. c. i.

|| Galen perhaps considered the *sextans*, *septans*, *oetans*, *nonans*, &c. as fictitious, because there was no remaining humor, to the putrefaction of which he could attribute their origin.

But Werlhoff despaired of being able to explain their periods by any of the hypotheses which he himself mentions, and especially from agitation of external and internal air, not very different from the agitation of the sea, which he thought afforded a convenient and probable explanation of the periodical return of other fevers. Lastly, Senac doubted of them, because he had never seen them, as if it were necessary for one man to have seen all these things, which it falls to the share of a very few to have an opportunity of observing.

§ De fed. et caus. morb. epist. 49. n. 36.

65. Left any body, however, should imagine, that I insist in this case more on authority and plausible argument, than facts and experience, which alone ought to be consulted, in support of the thing, I shall not neglect to adduce the testimonies of practitioners, by which, I think, I shall prevent the possibility of any doubt being entertained concerning such fevers. If, during this investigation, I may seem to go in search of more copious and numerous proofs than usual, I hope it will not be ascribed to any affection of erudition, which I heartily despise, but to the sense I entertain of the dignity of the subject itself. Hippocrates (*a*), therefore, has mentioned the *quintan*, *septan*, and *nonan*. Tulpus (*b*), also, makes Quintanæ; sextanæ; septanæ, &c. mention of a *quintan* which attacked the daughter of a certain surgeon, and continued for eight months in a very distinct and uninterrupted course. The same was frequently

observed by Avicenna (*c*), sometimes, likewise, by Gemma (*d*), Werlhoff (*e*), Van Swieten (*f*), Forest (*g*), Tissot (*h*), Sachsus (*i*), Panarolus (*l*), Marcellus Donatus (*m*), Jo. Arculanus (*n*), and others (*o*). Instances of the occurrence of the *sextan* and *octan* are related in the *Ephemerides Naturæ Curiosorum* (*p*). Zeuianus (*q*) describes the *sextan*, which is the rarest of all, as having been seen by himself, and observing regular periods for a whole winter : and, before him, Gentilis (*r*), declares he had seen the same fever. Not only Hippocrates (*s*), but likewise Thomas a Veiga (*t*), Sponius (*u*), Rhodius (*v*), Boerhaave (*x*). Morgnani (*z*), Werlhoff (*y*), Tissot, &c. record instances of the *septan*. The *octan* occurs more frequently, and Sim. Schultz (*aa*) had an opportunity of observing it. It was observed to continue a long time, and in an exquisite form, by Amatus Lusitanus (*bb*), Peter Salius Diverfus (*cc*), Ballonius (*dd*), Ettmuller (*ee*), Paulinus (*ff*), Pomp. Caimus (*gg*), Caprius (*bb*), Sponius (*ii*), Nigrisoli (*ll*), Salmuthus (*mm*), Werlhoff (*nn*), Riedlinus (*oo*), De Haën (*pp*), Tissot (*qq*), Hagedornius (*rr*), Razoux (*ss*), and a good many others. After Hippocrates, the *nonan* was observed by Zacutus Lusitanus (*tt*), by Werlhoff (*uu*), and by Avicenna, who makes mention of it, however, on the credit of a friend of his (*vv*). Notice is taken of a *deci-*

man fever, which continued two years, by the same Zac. Lusitanus (xx), and Gilb. Anglicus (xz); and also of a *quindeciman* by Gentilis, on the authority of Nicholas Florentinus (yy), by Rhazes (a*), Ballonius (b*), Nigrifolius (c*), and, what is surprising, Werlhoff himself confirms the existence of both the *quatuordeciman* and *quindeciman* fever, by his own observation (d*). Nor can one retain a doubt any longer about them appearing at a certain and regular period.

(a) Epid. l. 1. sect. 3. text. 2. (b) Observ. medic. l. 3. c. 52. (c) Canon. l. 4. Fen. 1. Tract. 2. c. 67. (d) Cosmocrit. l. 1. cap. 1. (e) De Febr. sect. vi. § iv. (f) Com. in Boerh. § 746. (g) Obs. et curat. medic. l. 3. obs. 43. (h) Avis au peupl. T. 1. chap. xviii. § 251. edit. Lausan. 1766. (i) Nov. Act. Nat. Curios. T. 1. obs. 98. p. 388. (l) Obs. Med. Pent. 2. obs. 45. (m) De med. hist. mirab. l. 3. cap. 14. p. 191. et seq. (n) Com. in Avic. quoted above. (a) Ephem. N. C. Cent. i. p. 196. et Append. Cent. vii. p. 308. (p) Cent. viii. observ. 10. (q) Nuovo Font. da cavar pronostic. P. 1. p. 27. (r) Com. ad. Text. Avic. already quoted. (s) l. c. (z) Com. in. cap. 4. l. 2. De differ. febr. Galeni. (u) Obs. de febr. quæstion. 9. (v) Cens. 1. obs. 18. (w) According to Swieten upon com. l. c. (z) De sed. et caus. morb. epist. 49. n. 36. (y) l. c. &c. (aa) Upon Bonet. Med. Septentr. T. 2. l. 5. p. 194. et miscell. N. C. an 4. et 5. p. 58. (bb) Cent. vii. curat. 75. (bb) Cent. vii. curat. 75. (cc) Annot. in lib. Donat. Ant. ab Altomare de med. hum. corp. malis, c. 12. (dd) Epid. Ephem. l. 2. contrit. vern. et æstiv. an. 1576 § xiv. (ee) Op. omn. T. 2. p. 1. Colleg. practic. prax. spec. l. 1. sect. 15. c. 2. p. 255. who had an opportunity of seeing it return every Friday, (ff) Ephem. N. C. Dec. 2. an 5. append. p. 39. obs. 64. (gg) Obs. Rhod.

citat. (*bb*) De Febr. Putr. l. c. (*ii*) l. c. (*ll*) On Sponius, note 3. (*mm*) Cent. 3. obf. 13. (*nn*) l. c. (*oo*) Lin. med. ann. 4. Decemb. obf. 18. (*pp*) Divif. Febr. Divif. 4. p. 9, (*qq*) l. c. (*rr*) Cent. 2. obf. 57. (*ss*) Tabl. Nofolog. et Meteorolog. Avril 1759. p. 150. (*tt*) Prax. Med. l. 3. obf. 34. (*uu*) l. c. (*vv*) l. c. (*xx*) l. c. (*zz*) Compend. de Febr. l. 1. (*yy*) Tr. 2. fum. 4. diftinct. 5. c. 5. (*a**) As Forest informs us, l. 3. obf. 43. 43. fchol. p. m. 160. (*b**) l. c. (*c**) l. c. (*d**) l. c. § xxxiv.

66. The fevers which exceed thofe bounds (64. 65.), and obferve ftill longer periods, as thofe which occur every month, or every fecond or third month, or are annual, and other fuch fevers, recorded by authors, do not feem to belong to this place, becaufe they are perhaps properly claffed with the ephemeræ. The monthly fever ufually occurs in women about the time of the catamenia, and in men immediately previous to the breaking out of the hemorrhoidal flux; although, accordidg to Sanctorius *, it fometimes occurs independent of thefe caufes. Not a few others make mention of the *trimeftris*, or that occurring every three months: Ballonius † ufed to be attacked by it on great changes of the feafons taking place, and he has publifhed fome inftances of the *annual* fever. We likewise read of the annual fever having been cured by De Haën ‡.

* As related by De Haën, in Thef. de febr. divifion. divif. 4. p. 10.

† Consult. Med. l. i. n. 48.

‡ L. c. p. 10. § 14.

67. We have already pointed out (62.) the fevers usually called *periodical*, and such as are named *erratic*. The *periodical* ones observe a certain order in their accessions, and certain periods. The *erratic* ones confine themselves to no order or type, but pass from one to another. To which class the *vagæ* seem to belong ; those, namely, which are much more uncertain in their course than the *erratic* ones, and never retain the similitude to any type. But, in the same manner as a regular or irregular type constitutes the *periodical* or *erratic* ones, so does a difference of the parts which the fever attacks, or continues to affect, give rise to a new kind of distinction. For, although fever generally affects the whole system, and is therefore esteemed an *universal* disease, sometimes, however, though exceedingly rarely, it seizes on a particular part. Hence *intermittents* may be divided into *universal*, and into *topical* or *particular*. Among the latter, according to Cnoefellius*, Jacobæus †, Bergius ‡, Swieten ||, and others, it is by no means a new nor unusual thing, for sometimes one arm, sometimes a leg, sometimes the hypogastric region, sometimes one

Universal and particular, or topical.

half of the whole body, to be seized periodically with all, or most of the symptoms, of intermitting fevers. To this class of *topical* intermittents should be referred, the whole of those fevers called by some *larvatae*. But they are called so, because, under the appearance of other diseases, they recur periodically, without any sensible fever, at least without any which affects the whole system. Of this kind are periodical inflammations of the eyes, tooth-ach, cholic pains, heart-burn, asthma, epilepsy, hysterics, St Vitas's dance, and other affections of the quotidian, tertian, or any other type; although, properly speaking, these are usually referred, rather to periodical diseases than to fevers. Because, however, like intermittents, they yield to the Peruvian bark, and the febrile symptoms are often felt in the parts in which they settle; such as, increased motion of the arteries, pain, heat, tremor, and similar symptoms; on that account they can be considered in some measure as *larvatae*, or *topical* fevers.

* Ephem. N. C. Dec. 1. ann. 3. obs. 205. p. 381.

† Act. Hassniens. vol. 1. obs. 119.

‡ Act. Succic. vol. xvi. Trimestr. 4.

|| L. c. § 757 Med. Essays, T. 1. p. 295. and T. 2. p. 305. Journ. de Med. T. xxiv. p. 60. &c.

68. But in whatever order, or manner, intermitting fevers proceed, they are called from the time of the year when they principally begin, or are most frequent, sometimes *vernal*, at others

The division into vernal and autumnal intermittents.

autumnal. The former, as Sydenham observes, extend from February to August, the latter from August to February; and as they differ, for the most part, in various manners, and in the appearance of the symptoms, so they have various terminations and differences in their duration. The *vernal* ones are every where considered as milder and of shorter duration; although they are not always so in fact. The *autumnal* ones on the other hand are more severe, and of longer continuance. But they both succeed each other, and generally, though not always, each on its arrival causes the disappearance of the other. For I have frequently seen after the appearance of the vernal intermittents, symptoms of the autumnal ones still remaining; or during the prevalence of the autumnal ones, the nature of vernal ones preserved. Another distinction of these fevers has been taken from observation: I mean the division of them into *depurativæ*, Depurativæ or corruptivæ. as they call them, or *perfectivæ*, and *corruptivæ*. The former are so named because they free the blood, during each accession, from the *fomes*, or cause by which the fever is kept

up, in such a manner that nothing of it remains in the system ; and by degrees whatever noxious matter has from time to time got into the blood, or is evolved in the blood itself, is again expelled, or corrected by them, and health is thus safely and quickly restored. But the latter do not wholly correct nor expel the *fomes*, but always supply it with new matter, or they vitiate, change, and weaken the sound fluids, or solids, in such a manner that the whole economy and constitution of the body is thrown into a worse condition. Hence the body is rendered both more pure and sound, by the former kind of fevers ; while by the latter it is more and more vitiated, dissolved and predisposed to other diseases of a worse stamp.

69. Nor must we neglect to mention, that intermittents are divided into *benign* and *malignant*, or, more properly, *pernicious* ; which differ from those called *corruptivæ* in their severity and the rapidity of their course. But according to Torti *, a man of very great experience, there are two kinds of *malignant* intermittents ; viz. the *comitata*, which although they intermit periodically, and, like the *benign* ones, have intervals of apyrexia, nevertheless in the paroxysms are attended with some peculiarly alarming symptom, by which the patient's life is quickly brought into danger, and

The benign and malignant ones.

is threatened with fatal consequences. The other is that of the *subcontinua*, as they are called, which being accompanied by no peculiar symptom, (whence they are also named *solitariae*) but by manifold and various symptoms, the intermission gradually becoming more obscure, and obliterated, sometimes *slowly*, sometimes *quickly*, hasten to the continued nature of acute fevers, some of the severe and various symptoms being extended to the time of the usual intermission and apyrexia. Moreover, such fevers are named *benign* as are farthest removed from each of these kinds, whether *comitatae*, or *subcontinua*.

* Therapeut. Special. lib. 3, c. i. p. 123. et 124.

70. But in the *comitatae* (for I shall speak of the other kind hereafter), since some symptoms appeared to Torti to de- ^{The pernicious} *comitata.* pend upon *colliquation*, as it is called, and some upon *coagulation*; these fevers, therefore, are again divided by him into *colliquative* and *coagulative*. To the *colliquative* kind are referred, 1. The choleric or dysenteric fever; 2. The *subcruenta* or *atrabilaris*; 3. The *cardiaca*; and 4. The *diaphoretica*, which, however, it is believed may sometimes be reckoned among the *coagulative*. To the *coagulative* again belong, 1. The *syncopalis*; 2. The *algida*; 3. The *letbar*.

gica, which comprehends the *apoplectic* and *soporose* fevers of others. These are the principal kinds of *comitatae* observed and described by our countryman Torti. The whole of the pernicious *comitatae*, however, are not contained among these. For Mercatus *, Morton, Morandus Morandus, nay, Torti himself enumerates other more rare fevers, for example, the *pleuritic*, *catarrhal*, *rheumatic*, *colic*, *arthritic*, *blind*, *scorbutic*, and *petechial* fevers. To which must be added that species which was observed by Frid. Casimir †, to prevail at Manheim, on account of the spasms and convulsions with which it was attended, to be named *spasmodic*: and likewise at each paroxysm attended with a white swelling of the whole skin, described by Storck ‡. But of each of these particularly hereafter.

* Mercatus is believed to have been the first perhaps who gave a clear description of them, next Morton and Torti, notwithstanding that while they were employed in making their observations, before writing, they had no previous knowledge of each other. But some vestiges of these fevers are to be found in the works of the older writers, namely, Averroes, Avenzoar, Vallesius, Mercurialis, H. Saxonia, Riverius, Sydenham, Epiphanius, Donatus, Horstius, Rhodius, Restaurandus, Sylvius, Etmuller, &c.

† Com: Lipf. Suppl. 2: ad Decad. 2: p: 204:

‡ Ann. Med. Secund. p: 163: ed. Amstel: 1779:

71. The other kind of pernicious fevers, na-

med by Torti *subcontinua* or *solitaria*, consists of one species only, equally prone to *colliquation* and *coagulation*; the nature of which amounts merely to this, that the period of the paroxysms becoming obscure, and the fever being prolonged to the time when the intermission usually takes place, with dangerous and malignant symptoms of various kinds, it seems extremely apt to degenerate into the continued acute fever. But this ought to be carefully distinguished from the species of intermittents, which is disposed indeed to become continued,—the new accession coming on so prematurely, that it supervenes upon the preceeding one before it is quite finished,—but is easily borne, preserves the periods of the accessions still distinct, and occasions no danger, distinguished by the name of *subintrans*.

The other kind of pernicious fevers, the *subcontinua*.

Subintrans.

Enough of these for the present; we shall treat of them more at large elsewhere when we come to deliver the particular history, symptoms, and method of cure of each. We shall only add, that such fevers are frequently peculiar to certain times and seasons of the year, and to certain countries, and therefore are sometimes observed to prevail *epidemically*, sometimes *endemically*, although we do not deny that they sometimes occur likewise *sporadically*. But we are informed by Meibomius, Lanzonius, Cleghorn,

Hevermannus, Lauter, Hoffman †, that *malignant* or *pernicious* fevers, of whatever kind, when they rage epidemically, are propagated into sound bodies by contagion. But that I hold as extremely uncertain, and of very rare occurrence; since the celebrated Beccarius could discover nothing contagious in a very severe epidemic, which attacked a great many people at Bononia in the year 1729. Nor have I myself, in other such epidemics, to which I paid pretty careful attention, ever been able to discover any thing leading to a certain conclusion. For the cause, in consequence of which a great number at the same time, in the same place, and under the same roof, are attacked with fever, is so general, that there seems to be no need for contagion to propagate the complaint from diseased to healthy bodies ‡.

* Tortius, l. c. p. 130.

† Passages may be seen in Trnkam's Hist. Feb. Interm. vol. 1. p. 1. c. v. § xxxiv.

‡ Act. phys. med. N. C. vol. iii. obs. 48. p. 142. et seq.

72. But in every true and genuine intermittent, three stages in each paroxysm are usually considered. The first, or incipient stage, is that of the *cold*, the second that of the *heat*, or the increase of the complaint, the third is that of the *sweat*, or the remission of the symptoms. Others affirm,

The three stages of each accession.

that there is a kind of intermediate space betwixt the *increase* and *remission* of the symptoms, when the fever neither increases nor decreases, which therefore has its name from remaining stationary. But because it is not very manifest, or because it is apt to be confounded with the preceding or succeeding stage, it is omitted by certain modern authors. In like manner, in the cold stage three degrees of violence are observed; the first is when the whole body, or at least some parts of it, is cold indeed, but is neither accompanied with tremor of the skin, nor do the limbs shake, and is called *refrigeration*, or *perfrigeration*. But if the skin is corrugated, and seems to tremble, it is then called *horror*, or *horripilatio*; and terminates the second degree of the cold stage. And lastly, the third stage of the cold takes place when the limbs shake and are agitated, and is denominated *rigor*. To all these degrees of febrile cold is superadded a certain proportionate uneasy sensation of dull pain affecting the whole system.

73. The first stage, or commencement, begins with frequent yawning and desire to stretch the limbs, now named *pandiculation*, succeeded by lassitude, heaviness and debility of the whole system; paleness and lividity, affecting particularly the nails, the point of the nose, and fingers; next cold, partly actual, partly apparent; pain in the

Description of
each stage.

The first stage.

back and joints ; shaking, especially of the lower jaw ; difficult and anxious respiration ; the pulse at first unfrequent, slow, and small, afterwards likewise weak and frequent, or at least quick ; nausea ; vomiting ; thirst ; watery, thin urine. These symptoms continue more or less for one hour, or two hours, rarely for three or four, and are exceedingly seldom extended to six, unless the fever be of the kind called *algida*.

74. The cold gradually remitting, or the first stage being finished, heat arises, and by degrees increases in such a manner as sometimes to become sharp and burning. The degree of it, however, does not always correspond with the degree of the preceding cold. The respiration then becomes freer, next great and frequent, but unaccompanied by anxiety ; the pulse is increased, and imperceptibly becomes great, strong, and frequent. Headach, and sometimes slight delirium, supervene ; the thirst continues ; the urine is passed of a deeper colour ; and these symptoms remain for some hours, until the transition to the last stage takes place.

75. In this stage all the symptoms of the second begin to abate ; the skin becomes softer and moist ; a warm sweat breaks out in great abundance from all parts of the body ; affording much relief. Nor is it an uncommon thing for vomiting and loose-

ness to occur at the same time. The urine which is then voided, is generally red and scanty, and deposits a sediment, similar to pulverised bricks, hence called *lateritious*, which is esteemed by many as a pathognomonic symptom of intermittents. But it is by no means so; for both I myself and others have sometimes seen it entirely wanting; in which case it appears brownish or yellowish with a cloud, or yellow deposition, nay sometimes like that of people in health; which, however, is very liable quickly to become turbid, and appears like that of cattle. Lastly, a gentle sleep steals upon the patient, on being awoke from which he complains of scarcely any inconvenience or uneasiness, except debility, feels tolerably recovered, and, in a short time, enjoys a perfect *apyrexia*, or intermission from fever. If any thing, however, inconsistent with sound health is still observable, it may be reduced to slight headach, or heaviness of the head, thirst, or some such inconsiderable symptom, together with some irregularity or frequency of pulse.

76. It is proper to observe, however, that these fevers do not always begin with cold. For sometimes their attack im- Exceptions and admonitions. mediately commences with heat, which principally occurs during the summer-time, or in warm weather. Sometimes also the cold only supervenes upon the heat which has already

begun, and is prevailing in the system, nor, as appears, is the accession then terminated by sweating *. Nay, sometimes cold puts an end to the whole fit †. Schenck makes mention of a tertian, the accessions of which ‡ observed an inverted order, as it were; since they commenced with sweating, which was succeeded by rigor and then heat. Moreover, Van Swieten || informs us, that these three stages (par. 73. 74. 75.) of every paroxysm of intermitting fevers, if compared with those of continued fevers, have a great affinity to them; the first stage, or that of the cold, resembling the increase of the others, the second their state of vigour, and the third their remission, in which the crisis and solution of the disease take place. But if we do not consider one accession only, but all the accessions together of every intermitting fever, *in that case*, he observes, *that the increase of the fever was going on so long as the paroxysm in the duration, number, and violence of the symptoms, exceeds the preceding one*; and that the remission had taken place, when, after the symptoms of concoction, which the ancients looked for in these fevers also, but whether with good reason, or not, I shall not determine,—the disease remitted of its violence.

* Ettmüller. *Oper. Omn. T. 2. P. 1. Pract. Prax. Spec. l. 1. sect. 15. cap. 2: in octan. n. 9.* Borrichius, *Art. Med. Hassnien. vol. iii. observ. 37.*

† Frid. Gafimir. Medicus Samml. von Beobachtung 1. Band.
§ 27.

‡ Lib. vi. p. 817.

|| L. c. § 749. 750.

77. But it is necessary now to say something concerning the causes of these fevers.

And first, to begin with their proximate cause, we must confess, that it appears * very obscure, and that a knowledge of it seems scarcely attainable. We have already shewn, (58.), what the followers of Galen thought upon this subject. Willis made it consist in a peculiar fermentation of the blood, by which the *nutritious juice*, or chyle derived from the ingesta, and not sufficiently assimilated, like *something heterogeneous and foreign*, is either subdued, or thrown off †; Sylvius ascribed it to the pancreatic juice rendered to acid by stagnation, and carried to the duodenum, along with the bile, (which is more or less acrid), in a vitiated state of effervescence ‡; Ettmuller places it in a *preternatural ferment* of a saline acid nature, generated in the stomach and *primæ viæ*, arising from a fault in the digestion, whether the latter be vitiated in consequence of a *digestive ferment*, or the *aliment taken* ||. There is no great difference between these and the hypotheses of some others; namely, of Borelli, Jones, and Besançon, who are of opi-

Concerning their causes, and first the more immediate ones.

nion, either that the nervous influence, on account of its passage through the nerves and glands being obstructed, stagnates, ferments and flows back, or *that the crude and acid particles of the blood adhere at the surface of the body, and twitch the fibres there, or that the acidity of the blood infects the nervous influence* §. But scarcely any of these opinions, in the present enlightened state of our knowledge of the animal economy, as the celebrated Home ¶ justly observes, finds a supporter; nay, being altogether fictitious and destitute of foundation, they have already of themselves fallen to the ground. But while Home rejects the opinions of others, it were to be wished, that the one, which he has substituted in their stead, concerning laxity of the fibres, and consequent diminution of the ** perspiration, as the *proximate cause* of these fevers, rested on a more solid basis ††.

* This appears to be the case in the opinion of Gorter. See his *Prax. Med. System. n. 195.*

† *De Febr. c. 3. p. 34.*

‡ *Prax. Med. l. 1. c. 30. a. § 58. ad. 129.*

|| *Oper. T. 2: l. 1. Colleg. Practic. sect. 15. c. 2. p. 393.*

§ As Home observes, *Princip. Med. P. 2. Sect. v.*

¶ *Ibid.*

** This hypothesis rests on a very slippery foundation: 1. Because such laxity of the fibres is frequently supposititious, and, for the most part, is not present in intermitting fevers; 2. Be-

cause laxity, or atony, of the fibres more commonly succeeds, than precedes, fever, and seems therefore to be rather the effect than cause of it; 3. Because cachetic and leucophlegmatic persons, and those labouring under anasarca, in whom both laxity of the fibres and diminution of perspiration are manifest, are not more liable to such fevers than others; 4. Because strengthening remedies and astringents would more certainly subdue the fever than Peruvian bark, which is much less strengthening and astringent; and, if they ever remove it, they generally do not effect this without injury; nor does it appear sufficiently manifest, whether they overcome the fever by strengthening the fibres, or by any other power or means; 5. Because the Peruvian bark, which is the surest and most efficacious remedy against fever, although slightly astringent, does not greatly promote perspiration; 6. Because sudorifics would be preferable to other remedies in removing fever; 7. Because it is still an undetermined point by what power the Peruvian bark subdues fevers; 8. Because, admitting such a cause, many of the phenomena of fever could neither be understood nor explained by it; 9. Because powerful and strengthening friction would remove every intermittent, not to mention many similar arguments.

†† Nay, De Haën, with many others, frequently confesses his total ignorance of its *modus operandi*. *S. Rat. Med. P. 3. c. 4. p. 171. and in the same book, c. 3. p. 136. et seq.* where he likewise properly shews, that after giving the bark both to men of a very firm, and those of a very lax, temperament, that it proved equally efficacious in restoring their health; and he concludes, *that, if the bark acted only by its astringent power, and by strengthening the lax nerves,* it would prove rather of great detriment, than service, to one of a rigid fibre.

78. Having, therefore, very slightly touched

upon these opinions, as being altogether nugatory, I shall not omit to mention the conjectures, in some measure plausible, which certain other learned men have formed concerning the subject (77.). First, then, some of them think it most probable, that the material cause of these fevers is something which, at stated times, is added to the blood, and excites the commotion to which the term fever has been applied. For, were one to suppose that it was already inherent in the blood, they look upon this supposition as very erroneous; because they think it scarcely possible for it to remain so long quiescent in the blood as the patient remains free from fever during the intervals. But if such an extraneous matter, when it has been infused into the blood, causes this commotion, it becomes altogether necessary, if rest and intermission should follow, to correct it, or, (as is more likely), to change it, that it may be easily secreted and eliminated from the body. For, that thus the blood, having either lost its noxious power, or the vitiated and deleterious febrile matter being excreted, returns to its former goodness and tranquillity, which continues until a new one similar to the former is imparted to it. But that, according to the difference of quantity, badness, thickness or force of the same matter, and ac-

The conjectures of
other authors.

Explanation of the
symptoms.

according to the different temperature of the blood itself, the nature, age, and strength of the patient, that faulty state is sooner or later corrected, or expelled, and that, therefore, each accession is finished in a longer or shorter interval of time.

79. But, according to them, if either from a fault of this matter, or from a defect in the vital powers, its correction or expulsion takes place difficultly or slowly; one or other of these results will be the consequence: namely, either one accession, when too long protracted, is immediately followed by another, before the departure of the first, or such a quantity of impure matter is accumulated in the blood as becomes fit to keep up the fever. In the former manner, before one accession be concluded, they say that the other steals upon it imperceptibly, and that kind of fever then arises which is named *subintrans*. But, in the latter manner, that the fever, from being intermittent, passes into the *continued* form. In like manner, that a periodical migration of the extraneous fomes into the blood occurs sooner or later, according to its various quantity, mobility, and nature, and the kind of place from whence it issues. For that a greater quantity of it, or its being more disposed to fluidity, or remarkable acrimony, cause shorter intervals of intermissions; while the opposite con-

In what manner they pass into continued fevers and *subintrans*.

The manner of the periods.

ditions occasion longer intervals. And as sometimes a longer, sometimes a shorter space of time seems requisite to collect and prepare the fomes, it is not to be wondered at if the fits return in some instances daily, sometimes every other day, sometimes every fourth, and sometimes even after a longer interval.

80. Besides, the places in which that febrile fomes is collected during an interval, they say may be various. But these they suppose to be either in the blood or not. The stomach, intestines, mesenteric glands, the vessels carrying chyle, the liver, pancreas, and whatever other parts there may be fit for that purpose, are believed to belong to the former class. To the latter belong, or are ascribed, all the conglobate glands throughout the extent of the body, or in the viscera, from which the lymphatic veins proceed. But in the latter, Torti suspects, that that matter is collected, which is rather disposed to excite the milder kind of fevers; namely, those which come on with cold and rigor, like other intermittents, but without any other severe symptom, and are lastly terminated by sweat breaking out over the whole surface of the body. But the former fevers, which excite violent symptoms at the bottom of the stomach,—as nausea, vomiting, cardialgia, looseness, gripes, rumblings of the bowels, flatu-

The variety of places in which the febrile fomes is contained.

lency, or shaking and rigors, affecting the back and loins principally,—or are derived from a bad manner of living, those same fevers, I say, seem to him to have their fomes in that part where such symptoms occur. It must be remembered, however, that the febrile cause, collected in any part merely by irritating the nerves and fibres, may excite fever without passing into the blood, as violent pain or inflammation of any part does; but that it is moved from the place in which it is contained, and ejected from the system periodically by the febrile motion which is excited, by the preceding irritation of the nerves and the spasmodic affection of the fibres. Besides, there are some who do not consider it as absurd to suppose, that that cause arises in the blood itself, and remains in it, and is occasionally increased and diminished in such a manner, that the febrile accession and its departure follow, without being derived from any other source.

81. But let us allow that that fomes is transferred by certain circuits from some of the parts already enumerated into the blood. Yet who can certainly inform us what is its first origin, and in what place it is concealed and collected? For if we suppose that place to be the cavity of the stomach or duodenum, or the receptacles of the bile, or any other part of the intestines;

The objections
that may be of-
fered to these
opinions.

would not the copious and repeated vomiting and purging, which not only Nature herself, but likewise art, attempts during the accessions, or before them, draw off and exhaust all the febrile cause? But, as Torti himself, and with him Sydenham, and a great many others *, declare, it is by no means consistent with experience, and, if any relate that that has been done successfully, they must confess that it happens so seldom, that it ought not to be adduced in confirmation of their opinion. Nay, on the contrary, it has been found more than once, that fevers are not diminished by such evacuations, but that they are oftener exasperated by them, or from being simple ones become double: to say nothing of the *choleric*, *dysenteric*, or *atrabilious* ones, and others, the danger or destructive nature of which is more immediate and serious, in proportion as such evacuations have been more or less excessive.

* Vide infra par. 115. et seq.

82. Besides, if the febrile cause really existed in these places (par. 80. 81.), it must be quite obvious, that it would be much more useful to administer the bark four or five hours before the accession, at a time when the cause of fever may be completely under the influence of the remedy, (if it can be supposed to act directly upon it), than at a time more

Other objections.

remote from the succeeding paroxysm. And yet experience has proved the very contrary. For we do not procure a certain and perfect effect from the remedy, unless it has been begun to be administered upwards of twenty four hours previous to the attack ; notwithstanding that Werlhoff * asserts the contrary. Which facts, though they sufficiently demonstrate, that the matter of fever is neither accumulated in the stomach, nor resides in it, nor in the biliary ducts, intestines, or neighbouring parts, still they seem to be of such a kind, as ought to make us suspect that it does not lurk there only, or is derived from thence, but that it springs from a more internal situation, or lies more deeply hid, or that another fault is present, giving rise to fever, which is cured by the use of the bark.

* L. c. sect. 4. § 7. note z.

83. But if the cause of all intermitting fevers be referred to the conglobate glands, and lymphatic veins, or to the nerves, or the external surface of the body, or the blood itself (77. and 80.), why are they not cured by aperients, sudorifics, antacids, and decoctions of wood as they are called ? Of the pernicious fevers, why does that called by Torti *diaphoretica* (70.) run so rapidly to a fatal termination, without the sweat proving at all ser-

Other objections
again.

viceable? Why do not the fevers, which are universally supposed to arise from vitiated conditions of the lymph, as those commonly called catarrhal, rheumatic, scorbutic, venereal, arthritic, strumous, since they enjoy intermissions, yield to the Peruvian bark, like other intermittents? But, as we are by no means capable of determining the place in which the matter of fever dwells, so are we equally incapable of divining what fluid is principally vitiated. However, whatever it is, we hold it to be a matter attended with very great difficulty to guess under what kind of vitiation it labours. Men of very great learning observe, that it may be in an acrescent or *alkalescent* state, that it may become corrupted, putrid, inspissated, excessive, or deficient, that it may acquire various kinds of acrimony, or may depart in any other manner from its natural temperature, motion, and circulation, so as to excite the febrile commotion. Nay, some are of opinion, that it may be vitiated in such a manner, that, at one time, acquiring the nature of a corrosive poison, it occasions vomiting, purging, excruciating pains in the stomach and bowels; or, rendered exceedingly acrid, it dissolves and attenuates the whole mixture and contexture of the blood; sometimes, having contracted acidity, it coagulates the blood, and so depresses or lays hold of the inflammable principle, or phlo-

gifton, as to create the most intense cold ; sometimes by its narcotic power it induces deep sleep, and, according to its various degrees of degeneracy, occasions the phenomena with which intermitting fevers, especially *malignant* or *pernicious* ones, have generally been attended.

84. Hence, as it appears that the fluids may be vitiated in such a variety of different ways, and it is very probable

What may appear
more probable.

that fever may be excited, sometimes by one, sometimes by another, kind of faulty state or vitiated fluid ; it consequently follows, as I think, that there must necessarily be not one, but several causes of intermitting fevers, and that, according to the different kinds of these causes, the fevers themselves do not a little differ in their nature and effects, as has been pointed out above. But, if we ought in fact to conclude so, how does it happen that the very same Peruvian bark checks or overcomes all the different species of intermitting fevers depending on such a variety of different causes ? Does it not, therefore, seem more consistent with reason, that all of them proceed from one proximate cause only, since they are subdued by one and the same medicine ? But this cause either almost altogether defies human ingenuity, or remains still involved in the most absolute obscurity. For all those who, with the ancients, dispute about the investigation of both

the material cause and its seat, as I have shewn, seem to have gone in quest of remote causes, not a proximate and continued one, to which it would have been very serviceable to have paid attention. But they seem to have proven, in a plausible manner, that it is not one and the same fluid that is vitiated, but different ones, according to the variety of the preceding causes, and of the fevers.

85. But lately the celebrated Valcarengi * ascribed the real cause of the accessions to one fluid only, namely, the bile; being chiefly led to adopt this opinion, from the following considerations. 1. Because these fevers prevail more frequently in the summer and autumnal season, when the bile is in a state of greater abundance, and more acrid than usual, or is more effervescent, but more rarely in winter, and then only when the autumnal or summer fevers are protracted till that time. 2. Because, in general, the same fevers are more safely and more frequently resolved by bilious evacuations, as is proven by the urine and sweat, both in smell and colour, indicating a superabundance of the bile. 3. Because they seldom attack old men, more frequently the young, and those of a choleric habit, and, in such people, are attended with greater violence. 4. Because they have very often been observed to

Whether the
bile be the
cause of inter-
mittents?

succeed to diseases of the liver, or give rise to them. 5. Because most of their symptoms arise either from the quantity of the bile, or from excessive heat or alkalescence of it, as it is called, and a putrid corruption, or some other similar vitiation, as appears from excretions of greenish, yellowish, or different coloured bile, which take place in their course both upwards and downwards, affording much relief to the patient. 6. Because yellowness of the tongue, bitterness of the mouth, an uneasy tightness and anxiety about the stomach and biliary passages, &c. attend these fevers, without doubt evincing unusual effervescence of the bile diffused over the system.

* De Præcip. febril. par. 27. p. 180.

86. These, and such like arguments, are adduced by Valcarenghi and those of the same opinion *, with such a The discussion of these arguments. shew of truth, that the greater part of physicians have been induced to adopt their opinion. And indeed I do not deny, that the arguments adduced prove that the bile and biliary vessels in such fevers are frequently affected; yet I cannot allow that we have sufficient evidence of the bile being primarily affected, and occasioning fever, and that it is not, together with the biliary vessels, affected

rather fecondarily by the violence, motion, and the matter of fever, whatever that be †. For the spasms about the lower part of the stomach, with which the fever is attended, the tremor and shuddering express the bile from the liver and gall-bladder, and after urging it on to the duodenum, or even to the stomach, throw it off by the mouth and anus. In the next place, it is by no means true, that evacuations of bile always occur in such fevers, or that patients are relieved or cured by them, as is affirmed; which has been evinced by many experiments; but, if it ever does happen, it is only when the fever is combined, as is often the case, with a collection of bile in the *primæ viæ*. Moreover, the yellow colour of the urine and tongue, bitterness of the mouth, gnawing pain in the stomach, and other such symptoms, ought not immediately make us suppose, that the fever arises entirely from excess, or heat, or corruption, or stagnation of the bile; since they may all be effects of fever, and not unfrequently depend on spasms of the stomach, duodenum, or ductus choledochus, by which the bile is made to flow back into the blood; and it is therefore manifest, that the bile is very often changed from its natural disposition, motion, and course; not in consequence of any vitiation in itself, but from some other cause. Many circumstances concur in shewing that this is the

case ‡, but especially wounds and contusions of the head ; 2. violent passions ; 3. an hypochondriacal or scorbutic affection ; 4. dropsy ; 5. old obstructions of the viscera ; 6. cachexies ; lastly, all acute febrile diseases, without even excepting inflammations themselves. For every one must know, that, in such cases, the bile frequently all of a sudden is either rendered vitiated in various ways, or is excreted in too great quantity, although shortly before it was in no manner vitiated, nor exceeded the usual quantity. It is equally well known that the urine frequently becomes red, is tinged with a saffron or still deeper colour, that the mouth acquires a bitter taste, that the epigastric region is convulsed in various ways, that the bile is thrown off by the mouth and anus, without its being primarily affected, or deserving to be reckoned the proximate cause of these symptoms. But if it be urged, on the other hand, that, from the symptoms being observed about the receptacles of the bile, it is manifestly the fomes and cause of intermitting fevers ; with equal propriety might it be affirmed in the comatose, lethargic, and other fevers, affecting various parts of the body, that the proximate cause of such fevers is seated in the head, brain, breast, and elsewhere, as the more violent symptoms are observed to take place about these parts.

* We do not speak of that bile which the older physicians supposed to be the warmer and more acrid part of the blood, and which Restaurandus considered as the cause of almost all fevers, not to say of intermittents, (Hippocr. de usu Chinæ Chinæ, cap. 4.), but of the true bile secreted in the liver. Before Valcarenghi, even Zendrini (della China China) derived intermitting fevers from this bile. Nor did Dr Mead differ much in opinion from them, and in his *Monit. et Præcept. Medic.* cap. 1. sect. 8. p. m. 22. he has not hesitated to make the following observation : “ For it appears by no means doubtful to me, that this fluid (the bile) is chiefly vitiated in intermitting fevers.”

† Senac (*De recond. febrib. interm. et remit. nat. l. 1. cap. 6.*) endeavours to shew, by several arguments, that the cause of fevers is diffused over the whole system, but that the liver and biliary organs are affected in a particular manner by it.

‡ The celebrated De Haën (*Rat. med. cont. T. 3. p. 196. 197.*) has the following observations on the subject : “ Those who have received a blow, contusion, or wound on the head, successively vomit bile of various colours : yellow, greenish, and variously tinged. Such as ride in a carriage with their face towards the coach-box, contrary to their usual practice, and those who go to sea for the first time, not unfrequently vomit bile of these various hues. That it actually is bile, which comes off under these various appearances, is sufficiently understood from its bitterness.” Moreover, he thinks it *probable*, that the bile thrown into motion by the action of the poison in the stomach and intestines, assumes those colours, and may tinge the urine with its own hue.

87. Nor must we allow that these fevers arise

and prevail only in the summer, or autumnal season, since they very frequently appear in the spring or winter; or only in the young and in those of a bilious habit, since they attack infants and young people alike, and those of every temperament. In proof of which, I call upon all who have practised medicine with attention in crowded cities. Nor are we authorised immediately to infer, even allowing that they attack young people and those of bilious habits more frequently and with greater violence than others, that they proceed from bile; since it is a well established fact, that every other disease occurs more frequently in the flower of youth, and rages with greater violence, and that patients so constituted being more robust, are liable to more violent diseases, from whatever cause they proceed. Nor is it an invariable truth, that obstructions of the liver precede or follow such fevers; nor, though that be granted, is the liver alone subject to this complaint, as other viscera also, and especially the spleen, perhaps more frequently fall into the same morbid state.

The confutation follows.

88. Lastly, I pass over what I hinted at above (81.), namely, that more service might be done by means of emetics or cathartics, if these fevers were owing to excess or vitiation of the bile. Moreover, I wave the inquiry, why, if either

Several things are passed over.

the quantity or vitiation of the bile were really the source of intermitting fevers, they are scarcely ever observed to occur in those diseases in which the bile is morbidly affected in one or other or both these respects, as in cholera, colic, and bilious dysentery, in chronic jaundice, and other similar complaints? But we must not omit observing, that persons, in perfect health, of every age and temperament, living in an atmosphere and country altogether free from intermitting fevers, on suddenly removing to a country where these prevail epidemically, or endemically, and rashly exposing themselves to the evening air, which is pregnant with noxious vapours, are very quickly seized with them; as we have frequently had occasion to observe. For is it at all likely that the bile in so short a time can be either increased, or vitiated, or corrupted in such a manner as immediately to occasion fever? Do marshes, and continued rains, or inundations, in the very heart of which intermitting fevers are fostered as in their natural seat, augment or vitiate the bile? Or rather, do they exhale some putrid miasma, or some kind of foul air*, by which the body is soon infected? or do they act upon it in such a manner, that a peculiar vitiation is evolved in the fluids calculated to excite fever?

* Vid. *infra* par. 98. not.

89. It is, therefore, not to be wondered if Hoffman, who could not give his assent to the hypotheses started by others, supposed that the *fundamental* cause of these fevers, as he calls it, consists in a spasmodic affection of the nervous and fibrous system, beginning in a particular manner from the spinal marrow, and proceeding gradually from the external to the internal parts. For he published a dissertation to this effect at considerable length, *De vera motuum febrilium indole et sede*, in which he has endeavoured to shew, that this opinion is confirmed in a remarkable manner by all the phenomena of fever at its commencement, viz. the pain of the back and loins, the shivering and rigor, and cold, particularly of the extremities, the blueness of the nails, the smallness and contraction of all the vessels of the hands and feet, the dryness and corrugation of the skin, a certain kind of foul, palish livid colour of the face, yawning, frequent stretching, a tremulous palpitation of the heart, anxiety about the precordia, difficulty of respiration, restlessness, tossing of the body, contracted, small and weak pulse, nausea, vomiting, bound belly with checked perspiration, thin watery urine, and a sense of the blood as it were boiling internally. And as he was persuaded, that from these it very evidently appeared that a spasmodic affection was, as

Hoffman's opinion.

it were, the *fundamental* or *formal* cause of intermitting fevers ; so he was of opinion, that all those things which might irritate or convulse nervous parts,—as emotions of the mind, rough cathartics, acrid substances taken in with our food or the air, caustic and poisonous things taken internally, or applied externally, or furnished by the vitiated fluids of the *primæ viæ*, likewise the more powerful astringents, cold things hurtful to the nerves ;—like the material or predisposing cause, greatly contribute both to excite fever, and, after its disappearance, to recall it.

90. Boerhaave * also thought that he had discovered some vitiation of the nervous fluid, which the cerebrum and and cerebellum are supposed to transmit to the fibres of the heart ; namely, a certain degree of sluggishness and inactivity, sufficient to account for the principal phenomena of these fevers. Afterwards, Van Swieten endeavoured to illustrate and confirm this theory. For he asserts, that all the phenomena of the accession of a fever plainly demonstrate, that the usual and uniform influx of animal spirits into the muscles is deranged. But these are lassitude, debility, trembling, stretching, yawning, and the like. Hence he thinks it follows, that the blood is propelled to the superficial vessels, neither in due quantity nor with sufficient force ; nay, that it

Boerhaave's opinion.

becomes sluggish, and stagnate there, as appears from the cold, shaking, and rigor, the paleness, palpitation of the heart, smallness of the pulse, and other symptoms with which the attack of fever commences. It is, therefore, not without some shew of probability that he concludes, with Boerhaave, that the proximate cause of such fevers *consists in a viscosity of the arterious blood, and perhaps also a sluggishness of the nervous fluid, both of the cerebrum and cerebellum, destined to go to the heart* †.

* De cognosc. et curand. morb. par. 755.

† Ibid. in comment.

91. He then, with a great deal of learning, adduces a variety of arguments in support of his opinion. For, he remarks, at the beginning of the paroxysm, when some impediment

What Boerhaave advances in favour of Swieten.

to the arterious blood, proceeding in due quantity, and with its usual force, to the extreme vessels, is observed to arise, we at once infer, that this takes place, either in consequence of too great lentor in the fluid, or increased power of resistance in the vessels, or defect of the moving powers. But a few minutes before the commencement of an attack, a person affected with a quartan fever seems to himself to be in perfect health, and very frequently vainly flatters himself that he is exempted from any future return of the complaint.

Shortly after, however, his body is seized with universal shivering, and an unexpected return of the fever convinces the patient of the fallacy of the hopes he had fondly entertained. But it is scarcely possible to conceive that the blood becomes so suddenly changed, as in one moment to be affected with lentor, and to be incapable of making its way through the extreme vessels. Every one, however, must at once perceive the futility of this hypothesis, of which *Bellini* was the inventor and defender. But admitting, likewise, a periodical return of lentor of the blood, as is taken for granted in this hypothesis, how will it account for the phenomena of the *diaphoretic*, *dysenteric*, *atrabilarian*, and similar *pernicious* fevers? How will it apply to those which begin their attack without any symptom of cold, shaking, or rigor? Can they be referred to such lentor? What line of distinction must be drawn between other fevers, such as, rheumatic, catarrhal, arthritic, cachetic, and those arising from obstructions, which are considered as depending wholly upon lentor of the blood, and by no means yield to the bark, and those intermittents, or remittents, which are to a certainty removed by it?

92. Van Swieten * proceeds to observe, that it is much less probable that the solids of a sudden acquire such rigidity and hardness, as to re-

pel all the fluids. For such a change in the fibres and coats requires no small time. It therefore follows, that the cause of so sudden a change must be referred to the moving powers alone, or to the principle of Hippocrates, called *impetum faciens*, which is considered as perfectly mobile and susceptible of being called into action from the slightest causes. Hence he mentions having seen an instance of a quartan fever occurring in a girl, in perfect health, who was immediately seized with a first attack of the complaint, on being terrified at the sight of a mouse, and continued to labour under it during the whole winter, until the approach of the spring: and, when she had been free of the complaint for two months, he moreover observes, that, in consequence of an impudent boy throwing a dead mouse before her, she suffered several relapses of the disease from her terror. He has also frequently observed young people seized with convulsions, chiefly at the time when the vernal tertians, though salutary, begin, affording no small proof of the whole system being thrown into a state of derangement, from a change in some very subtle fluid. He observed in the midst of a salivation, when almost all the fluids were dissolved by mercury, and, of course, when no lentor could be present, a tertian arise during

Van Swieten proceeds to defend his hypothesis.

the vernal season †, which did not disappear till after four accessions.

* Ib. in Comment.

† It frequently takes place in persons using mercurial ointment, so that the cure must be put off till the fever cease, or be checked by the Peruvian bark.

93. Lastly, he instances the Peruvian bark, the most efficacious remedy in all intermitting fevers, which, according to Sydenham, affords remarkable relief in hysterical and hypochondriacal affections proceeding from too great mobility of the nervous system, and a derangement of the spirits (*nervous influence*). He concludes, therefore, that the causes in each disease admit the same explanation. Nay, he supposes, that from hence we should derive the reason why fevers adhere more closely to such debilitated systems, and can scarcely be cured but by the application of Peruvian bark, which also proves very serviceable in such cases by its tonic power. He moreover remarks, that violent and unusual emotions of mind, in which it is completely absorbed, and such as are sufficiently permanent, have sometimes dispelled those fevers; as by their means was removed the sluggishness of the very subtil fluid, on which the origin of the fever seems to depend. Thus Quintus Fabius Maximus, the Roman Consul, on joining battle with the Allo-

broges and Avernî, in the heat of the engagement was freed from an attack of a quartan fever, under which he laboured.

94. Such are the arguments, in support of the proximate cause of intermitting fevers, depending on the authority of an author, in point of genius, learning, experience and celebrity, of the highest respectability. But there seem to be some objections to our hastily adopting these opinions. And, in the first place, I am very much surprised that two physicians of equal celebrity, profundity and experience, Hoffman and Van Swieten, from the same phenomena of fever, which they both adduce, should have been led to draw directly opposite conclusions. The former has supposed increased influx of spirits into the nerves, and increased power of resistance in the solids, from almost the same symptoms from which Van Swieten inferred both diminution and inactivity of the same nervous influence, and laxity or atony of the vessels and fibres. So much do great genius's in investigating the causes of diseases, which are generally very obscure, differ in sentiment. Next, it ought not to have appeared by any means surprising to Van Swieten, that the solids in almost a moment's time should become so rigid as to afford too much resistance to the fluid passing through the extreme vessels, if he

The arguments
adduced are re-
futed.

had remembered that they may be on a sudden spasmodically affected, and thus occasion the resistance.

95. But were inactivity and deficiency of the nervous fluid to be uniformly considered as the proximate cause of intermitting fever, and if from it proceeded the lassitude, debility, trembling, and other symptoms attending the commencement of fever, how (to retort the argument), can that inactivity of the nervous influence take place on such a sudden in the brain and cerebellum, without being preceded by any lesion of the animal functions? How comes it, while the nervous fluid labours under such inactivity, before the motions in the whole become languid or morbid, that the mental functions are not injured? Nor is any one authorised to suppose, that the fluid of the cerebrum and cerebellum appropriated to the heart alone, then becomes torpid and scanty in consequence of any vitiation, as if not it, but some other, were assigned to the mental functions. For it has not yet been clearly shewn that this fluid is twofold, or that there are two kinds of nerves, one belonging to the animal, the other to the vital functions. Moreover, what can be said of intermitting or remitting fevers, which are excited without cold or rigor, or any of the other symptoms of diminished strength, but

Inactivity of the nervous influence, doubtful.

which, however, are stopped by the bark? Must their origin also be ascribed to inactivity of the vital spirits, while they evince no proof of it from the symptoms enumerated by Van Swieten?

96. With regard to a tertian arising in the midst of salivation, does that more clearly prove the truth of inactivity and lentor of the nervous fluid, while

The weakness of
other argu-
ments set forth.

it seems opposed to the lentor of Bellini? Moreover, does the terror, in consequence of which he mentions the girl's having fallen into a quartan, possibly check and restrain the nervous fluid? Does it not rather derange, agitate, and excite it? Why does he call in the Peruvian bark to support his hypothesis? According to Sydenham, whom he quotes, it allays and stops irregularity of the nervous influence, and does not excite or call it forth. Nor, because in the spring-time he has seen young people attacked with epilepsy, does it follow, that the intermitting fevers, which come on then, can be said to arise from the brain and nerves being affected. For why do not other vernal complaints proceed from the same cause? Why also are not the epileptic fits of the young observed to be more frequent in autumn, when the number of intermitting fevers increases?

97. Nor can the boasted resemblance betwixt

Nor are the remaining ones of more consequence.

hysterical complaints and intermittents prove more ; for neither does the bark easily overcome and subdue hysterical complaints, as is said, nor are women, who are subject to them, more liable to intermittents, as they otherwise ought to be. I wish they were ; for it is an old observation, that spasms are often removed by the febrile motion ; but intermittents alone do not produce that effect. It is in vain to mention the case of Quintus Fabius Maximus as an objection. Who can roundly assert, that his quartan was removed by the variety of his cares alone ? and that nothing should be ascribed to the violent exercise of body he experienced, and the copious sweat promoted by it, or that nothing should be ascribed to the change of air, in which is placed the chief power of removing such fevers ?

98. In a subject, therefore, attended with such difficulty, and with regard to which there is such diversity of opinion, it is by no means safe to determine upon any thing decidedly ; and, I think, we cannot do better than keep in view what Van Swieten himself has observed in the following words : “ In investigating the causes of diseases, it is better to proceed only as far as we are authorised by faithful observations, and the known structure of the human body ; and,

More probable conjectures concerning the proximate cause.

“ in other respects, to confess our ignorance, than
 “ to amuse ourselves with fictitious hypotheses,
 “ however ingenious*.” But, if we may be allowed
 to conjecture, it is perhaps merely probable, that,
 when intermitting fevers are primary and legitimate,
 and yield to the powers of the bark alone,
 their proximate cause is uniformly the same †,
 and differs only in degree of violence, according
 as the fever is either sporadic or endemic, or epidemic,
 or more or less malignant, and, therefore,
 gives rise to a variety of different phenomena :
 while it is of different kinds in those fevers which,
 though they remit, are not overcome by the Peruvian bark.
 But that the matter of fever is sometimes confined,
 or more hostile, to one part, than it is to another,
 which seems to be indicated by periodical diseases,
 topical fevers, and those called *larvatae*, (66), as hemicrania,
 colic pains, pleurifies, hemoptysis, epilepsies, uterine
 hemorrhages, and other periodical complaints;
 in which the Peruvian bark performs a cure with equal success.
 And that such a febrile *fomes* probably does not exert its
 power before arriving at the primary organs of circulation,
 and affects the nerves more intimately, especially such as
 pass off from the spinal marrow, or belong particularly
 to the abdominal viscera. But since the subject does not
 admit of farther investigation, and seems almost to defy
 human ingenuity, it will be more proper to enumerate
 those causes of in-

termittents, which are called manifest, because they are obvious to our senses.

* Com. in Boerh. tom. iii. P. 1. p. 93. ed. Venet.

† In the history of the epidemic nature of the intermitting fevers, which occurred in 1765, subjoined by me to a book intitled *Saggi di Medicina Pratica*, &c. P. 1. p. 37. I was of opinion, that their origin was to be referred to the effluvia of a corrupted marsh. I declined, however, offering any thing positive on the peculiar nature of these miasmata, that I might not be obliged to have recourse to hypothesis, from which I wish to refrain as much as possible. I knew that others had adopted this opinion, (Med. & Phil. Comment. by a Society of Gentlemen in Edinburgh), while at the same time they confess their ignorance of the true nature of these miasmata. An anonymous author (ib.) believes all intermittents to arise from this cause; and that there is no difference between intermittent and continued putrid fevers, or, as he denominates them, nervous, except the variety of these miasmata occasioning them. Pringle (Diseases of the Army) believed it to be of a putrid nature; Senac (L. C. l. 1. c. 5. and l. 3. c. 3.) believed it to be of a poisonous nature, not free from putrefaction; Morton (De febr. exercit. l. c. 3.) says that it is a poison, but of an unknown kind, destructive to the nervous fluid, or nerves.

99. These are such as may accumulate a viscid, inert, or otherwise vitiated matter in the *primæ viæ*, as difficultly digestible food, either too coarse, or too corruptible; unripe, feculent or vapid wine; crudities of every kind in the stomach, or depravations of the fluids of the abdomen; an indolent life; foul

Manifest causes.

air, or that proceeding from marshes; likewise whatever other things derange the animal economy, as great anxiety of mind, suppression of customary evacuations, imprudent exposure to the cold air, infarction of the viscera and lymphatic glands, inspiration of putrid exhalations and vapours, &c.

DIAGNOSIS,

100. WE have already said enough, perhaps too much, upon the causes of these

Symptoms..

fevers. Let us now turn our attention to the symptoms. The general symptoms have already been enumerated; those peculiar to particular fevers will be delivered hereafter in their proper places. But the diagnosis of the *pernicious*, or malignant fevers, called by Torti *comitata*, depends, as has already been observed (69.

Particularly of the pernicious ones, called *comitata*.

70.), upon the fatal symptom, from which the fever has both its name and pernicious nature. It is proper, however, to know that at first it appears milder, and, as the disease advances, becomes more severe and dangerous. Hence, when it has not yet acquired its more intense degree, in order to determine its destructive nature, we must

cautiously attend to other symptoms. In the first place, when the paroxysm is finished, which any severe symptom had rendered suspicious, we ought carefully to inquire, whether, on the day of the intermission, there remains any dryness or roughness of the tongue, or unusual tossing of the body, (though the patient be neither feverish, nor complain of any thing), restlessness, or frequent sighing to obtain relief, or a frequent desire to vomit, while the stomach is empty, returning every now and then, or thin stools, or constant drowsiness, or other such symptoms; for in that case we may suspect some malignity to be present.

101. In which case, unless they are symptoms, or effects, of hypochondriasis, or another manifest cause, it is to be feared, lest, on the next attack, true cardialgia, or a choleric affection, or incurable lethargy, or some other very severe symptom of that kind may attack the patient. But in particular nothing discovers the suspicious and insidious nature of a symptom so much as the pulse; if we confine ourselves to the first six species of *pernicious* fevers. For the seventh is characterised not by the pulse, but rather by the respiration, which is usually difficult, unequal, and accompanied with a kind of snoring; nay, by a single symptom, namely, the deep sleep. But in the

How they may be
ascertained be-
fore.

others, during the whole time, when the symptom is urgent, and even after it is finished, the pulse is more or less remarkably depressed, according to the greater or lesser degree of intensity of the pernicious symptom. On the other hand, when the symptom, although otherwise severe, and not to be despised, still is free of malignity, the artery affords a more powerful resistance to the touch, and when compressed immediately recoils and vibrates. The more, therefore, the pulse is affected and languid during the presence of the symptom, the less it is elevated and rises, on the symptom being overcome and removed, and the greater the degree of strength which it has lost, so much the more pernicious must that symptom be held. But great deficiency of the pulse, implies the greatest and last degree of danger, and is followed by coldness of the whole body, especially of the extremities, livor, the facies Hippocratica, and lastly death.

102. There still remains to be mentioned the class of *Subcontinua*. These, although they consist of intermitting fevers somewhat protracted, still do not retain the same manifest nature of the paroxysms; but, nearly in the same manner as true continued fevers, the cold and shaking becoming gradually less, they go through their course, until they arrive at the turn; which, though it be sometimes accompanied with apyrexia, as be-

fore, yet never terminates in perfect remission. Nor is it from any one peculiar symptom, but from various symptoms, besides their continuity and considerable loss of strength, that we apprehend danger, which is always the greater the more they deviate from the duration and symptoms of intermitting fevers. On the contrary, those called *subintrantes*, proceed nearly in the same order as formerly, although they do not intermit entirely, and are not borne with much more difficulty than when the patients enjoyed an intermission.

THE PROGNOSIS.

103. With regard to the Prognosis there is an aphorism in Hippocrates to the following purpose: *howsoever fevers intermit, it implies that there is no danger present* *. But experience refutes the universality of such an observation; for with regard to the *pernicious fevers*, which, if the genuine works of Hippocrates be consulted, appear to have been unknown to him, it has already been shewn with how much danger they are attended, although they do intermit. What the father of medicine says, then, is true, if he speaks of the benign and legitimate intermittents,

or of those which, losing their continued nature, have attained an intermission. For, in general, the benign and legitimate intermittents are free of danger, nay, are held by some to be salutary, and to prepare people for longevity; while the malignant and spurious intermittents †, especially such as degenerate into acute continued fevers, are esteemed the reverse. Which the author of the seventh book of Epidemics, falsely ascribed to Hippocrates, has already noticed when he says: “Cholera morbus, especially in the summer, and intermitting fevers, and such as are accompanied with rigors, sometimes become malignant, and acquire the nature of acute diseases; but we must be on our guard against them. Such diseases, however, are best pointed out on the fifth, seventh, or ninth day; but it is better to observe them to the fourteenth ‡.”

* Sect. 4: Aph. 43.

† We shall shew hereafter what are legitimate, and what are spurious fevers, when we come to the particular discussion of them.

‡ N. 40:

104. In forming an accurate prognosis, we are greatly assisted by the careful consideration both of the fever, and of the manner in which it comes on, proceeds, and goes off, and of the patient's regimen,

Other prognostics.

Q4

the season, constitution, &c. For a quotidian is generally of longer duration than a tertian; not so much so, however, as a quartan, which is protracted to months, and sometimes even to years, unless we have recourse to the bark; inasmuch that before the discovery of that blessed remedy, it was universally held forth as the disgrace of physicians. Vernal are less lingering than autumnal intermittents. Strength of the bowels; evacuations happening at proper times by the mouth and anus, after digestion has been performed, if it can take place, moderate sweat relieving the disease; neither thick, nor viscid, nor cold, flowing universally, and not too long prolonged, render the disease of short duration; but the marks which are the opposite of these; acrimony of the blood either actually present, or about to take place; a vitiated state of the fluids, and weakness of the solids, denote that the disease will be of considerable duration, or a succession of other diseases, namely, of obstructions of the viscera, various kinds * of tumours, edematous swellings, cachexy, ascites, hydrothorax, anasarca, icterus, and other diseases, in which the fevers, which we have named (68.), *corruptivæ*, principally terminate.

* According to De Haën, three kinds of tumours supervene upon intermitting fevers. The first is occasioned by induration and enlargement of the spleen, and edematous swellings of the

feet. Swelling of the spleen, as Sydenham informs us, frequently removes fever, principally, however, in young people; hence it is called salutary, although, in my opinion, it is not always so. De Haën also observes, that edematous swellings disappear either spontaneously, or by gentle friction. But that likewise is by no means uniformly the case; for they frequently require internal remedies. The other kind affects the viscera of the breast and abdomen; hence arise dropsy, jaundice, rickets. These are very difficultly curable. The third comprehends scirrhus and cancer arising from obstructions of the viscera, to which are added ascites and encysted dropsy; and diseases, as appears, scarcely leaving any hopes of recovery.

105. Errors also in diet, the abuse of cathartics or blood-letting, render these fevers of longer duration and more obstinate, especially quartans, greater length of which is denoted likewise by immoderate appetite. The words of the author of the *Coacæ præctiones* * are worthy of remark, as applying here. *In those whose bowels, during intermitting fevers, growing warm unequally, are distended with flatus, and transmit little, after the crisis, if there arises a pain of the loins, a passage is procured. But such as are warm to the touch, and are affected with torpor, thirst, and continual tossing of the body, are freed from co-stiveness. Sometimes also red burns upon the feet, denote the same.* The following observation of Hippocrates applies here: *An intermitting erratic fever, will be changed into a quartan, par-*

• Other remarks respecting the prognosis.

ticularly if the autumn be approaching. With regard to other prognostics, belonging more properly to each of these kinds of intermittents, we shall speak hereafter.

* N. 158.

† Præfag. l. 2. n. 28.

C U R E.

106. The method of cure should be different in the benign and *depurativæ*, in General cautions. those called *perniciosæ* and *corruptivæ* (68. 69.). The benign, exquisite, and *depurative*, scarcely require the aid of a physician. For, in them the morbid matter is overcome by the powers of nature alone, and is dispersed at each accession, or is excreted by some sensible evacuation, in such a manner that health is gradually restored. The contrary is the case in the rest, which cannot be overcome but by art and medicines, especially by the employment of the Peruvian bark. On the whole, the material cause, or fomes of the fever, ought to be corrected and expelled. The febrile motion also must be regulated; that we may obtain that end by means of it. Lastly, we must in due time cautiously prevent the symptoms and other evils, which occasionally supervene on these fevers. If the mate-

rial cause lies hid, or cannot be easily corrected and expelled, or if of that kind that overcomes the power of nature, as happens in the pernicious, and malignant, or corruptive kinds, the whole cure must be committed to the Peruvian bark, which, with admirable efficacy, quickly, safely, and pleasantly overcomes all intermitting fevers, provided they be primary and legitimate, and not symptomatic or spurious.

107. The remote and manifest causes which gave rise to the disease, claim particular attention. When it seems to have arisen from any passion of the mind, as anger, great fear, desire, and the like, in that case it is probable that the body labours under no other vitiation, if indeed we can consider such a cause sufficient, without some taint having been imparted to the fluids. Therefore, to remove, or lull it, quiet of mind alone is sufficient, to be procured by time or sleep, or the exciting of some other passion, by which the effect of the former one may in some measure be done away, as we often see hiccup and slight hemorrhagy removed by sudden fear. But if the fever be induced by cold or checked perspiration, it is probable that the lentor of the blood arising from that cause will be resolved by the febrile motion, and that the retained perspirable matter will pass off by the sweat. When the

We must be particularly attentive to the evident causes.

primæ viæ abound with foreign fluids and vitiations which keep up the fever, and therefore nausea, foul tongue, fetid breath, anorexia, tension or heaviness of the epigastrium and hypochondria, accompany the disease, or have preceded it, or other proofs of bad chylification evince themselves; to clear away the fordes entirely, we must employ emetics, cathartics, clysters, copious, saponaceous, inciding and salt drink, and abstinence. But this is more readily and effectually done in young and plethoric habits, after premi-

If from the bile? sing blood-letting. If the bile be abundant, as it often is in the bilious

temperament, and during the summer season, when fevers readily assume the ardent form, besides those remedies which cause gentle evacuations by the mouth and anus, subacids may likewise be employed as they oppose alkalescence and putrescence of the fluids, whatever the followers of Sylvius's hypothesis, if there are any such still, may say to the contrary. It may sometimes happen, however, that the *primæ viæ* may be filled with acid crudity, which may give rise to obstinate fevers. That faulty condition is discoverable from the farinaceous, crude, vegetable diet, already in a state of acidity or verging on it, acid eructations, paleness of the face, swelling of the belly, green stools, or of an acid smell, the age,

If from acid crudity?

condition is discoverable from the farinaceous, crude, vegetable diet, already in a state of acidity or verging on it, acid eructations, paleness of the face, swelling of the belly, green stools, or of an acid smell, the age,

or sex predisposed to spontaneous acidity. In which case, absorbents and antacids, together with gentle cathartics of rhubarb, are of very great service. Hence the virtue of magnesia alba, powder of burnt oyster-shells, and of the fixed alkalis, in removing intermittents, is so much extolled.

108. Sometimes the blood deviates from its natural state, in an inflammatory dia-

thesis, or warm lentor, or bilious acrimony, or some such bad quality, which is not uncommon, particularly

If they be attended with an inflammatory state of blood?

in continued fevers from the beginning, or in such as have a tendency to the continued form. Then blood-letting and a strict diet are requisite, besides those remedies which dilute, refrigerate, and correct acrimony. Sometimes a cold lentor of the fluids, or

Or inert mucus?

an inert, scarcely acrid, difficultly putrescent mucus, occurs in intermitting fevers of long standing, which fills, and by stagnating obstructs, the extremities of the arteries and veins, or the surrounding cellular membrane, in which the circulation seems to go on slowly. Such a vitiated condition is generally accompanied with atony of the solids, nay, it often proceeds from such atony. Then the mucus must be resolved by bitters, saline, acrid and calefacient remedies, and the tone of the viscera and all the vessels must be

gently excited and strengthened by means of corroborants.

109. But if noxious effluvia, the miasmata of putrid marshes, epidemic miasmata, or any such thing, seems like a poison to have occasioned the fever, we must immediately have recourse to antiseptics, of which we have great abundance. But of them all by far the best is the Peruvian bark, provided it be of the best kind, and employed with a liberal hand, as it ought. Lastly, if the intermittent is known to be secondary, or symptomatic, as that which sometimes depends on scrofula, scurvy, rheumatism, tubercles, pulmonary consumption, or any other primary disease; in that case, omitting the bark, as inefficacious and incapable of removing the fever, although it be distinguished by particular intermissions, we must resort to those remedies which are adapted to the primary disease, and persist long in them.

110. Whoever is desirous of applying properly to the cure of intermitting fevers, ought to keep those precepts always in view. Besides, there remain some particulars necessary to be known, concerning the proper method of letting blood and procuring other evacuations, which may serve as a torch to guide the student, in his doubtful and dangerous voyage, and by which, under the auspi-

What if they arise
from noxious
vapours?

Cure of the secon-
dary or sympto-
matic fever.

ces of reason and experience; he may be taught to avoid the shoals and rocks that fall in his way. And first, with regard to blood-letting, this, by the common consent of all, is reprobated in intermittents, especially epidemics, even vernal ones, because, as Sydenham declares *, they are often rendered more pernicious and tedious, while the severest symptoms come on, not without actual danger to life. Torti gives his assent to this opinion, and affirms, that, on the same day when the blood is let, the fever is changed from simple to double †. He owns, however, that this very often happens spontaneously, and without such a cause, and that it has resulted from bleeding, when he had seen it employed in summer fevers without a cautious attention to circumstances.

Regulations as to
bleeding.

* Observ. Med. sect. 1. cap. v.

† Ramazzini saw repeated blood-letting prove hurtful, and fevers doubled in consequence of it, in the epidemic fevers which prevailed in the country in the year 1690, when, from excessive rains, and dearth of provisions, the *corruptive* chiefly prevailed.

III. Therefore, both reason and experience point out, that some distinction is necessary, namely, that neither are we always to fear blood-letting in these fevers, nor must it be used indiscriminately in all. For, before determining upon any thing, it is necessary to con-

How a physician
should conduct
himself in deli-
berating about
letting blood.

sider both the season of the year, the nature of the fever, and the patient's age and temperament. During the spring-time, when people are of a plethoric habit, and when the fluids are thin and expanded, and in some measure are disposed to purify one another, if the fevers incline that way, as they generally do; if the age, temperament, and other circumstances of the patient permit it, why may not the quantity of fluids be advantageously diminished by venesection, and a greater space obtained in the vessels, that the motions of nature being rendered more free, may more expeditiously and readily effect their purpose? What though the disease be pretty acute, and the pulse of considerable violence and fulness? In such a state of plethora and quickened circulation, may we not prevent, by means of blood-letting, inflammations of the viscera, congestions and ruptures of the vessels?

112. But, in the summer-time, when the quantity of the blood is less, on account of its more subtile parts being converted into vapor; when all the fluids incline to become thinner; when they manifest the greatest propensity to alkaliscence and corruption; and when the bile is more copious and warm than usual; we must not have recourse to bleeding rashly. At least not unless in an unusual effervescence of the blood, in

In the summer
and autumn
blood-letting is
proper.

an inflammatory diathesis of the system, in the case of fulness of the vessels and habit; and other similar conditions. Much less, as most authors imagine, is there room for bleeding in autumn; because the more subtile part of the blood being dissipated, they suppose that which remains to be rapid and stale. Hence at that time the fevers seem to be chiefly slow and lingering, corresponding with the thickness, lentor, and sluggishness of the fluids. But it sometimes happens, that at times, likewise, not adapted to blood-letting, the constitution of the blood, on account of some intervening cause, is extremely prone to inflammations, and otherwise renders bleeding proper.

113. Above all things, the fever itself, and its symptoms, deserve attention. When it is violent, or there is a tendency to the continued form, venesection is required; likewise, when any particularly severe symptom, as coma, delirium, pleuritic pain, spitting of blood, very great dyspnœa, is present, if it is not otherwise contra-indicated. Not is blood-letting alone, but cupping-glasses also, and other revellent remedies, then employed with the best success. These, however, as must appear manifest to every one, are proper, not from the nature of the fever alone, but from the cause of the conjoined symptoms; nor are they truly adapted to

When fever of itself requires blood-letting.

the benign and exquisite fevers always, but rather to the pernicious or corruptive kind.

114. Something must be said, likewise, about the time when it is proper to let blood. The French draw blood at the very height of the febrile heat, and the same is pretty generally the practice of the Italian physicians. By many others, however, and principally the followers of Galen and the ancients, it is employed on the day of the intermission only, or at least towards the end of the fever. But, if there be any necessity for it, it may be drawn with propriety at any period of the disease, except at the commencement of the paroxysm, when, without doubt, bleeding may prove fatal, however otherwise some may either do or say, rendered bold by the desire of innovating, or impelled by temerity.

The time when the blood should be let.

115. The observations concerning blood-letting, which we have extracted from Sydenham and Torti, are applied by them in like manner to purging; affirming, that similar effects to what they saw result from venesection, proceed likewise from purging, especially when the disease prevails epidemically. But Ramazzini, in the celebrated epidemic (110), which prevailed in the country parts around Mutina, found purging and vomiting to be less noxious, provided they

Concerning the manner of purging.

were used within the bounds of moderation. Otherwise they rendered the disease more obstinate and violent. Nay, Matthew Georgi (*Art. piccol. di medicar.* p. 61.) mentions, that, one autumn, in the district of Tortona, *the fevers returning with a tertian type, when treated with frequent purging, proved fatal*; but that, when the purging was omitted, by the advice of the celebrated More, they were almost all cured. But not a few extol vomiting, especially at the beginning of a quartan, and sometimes repeated, as occasion requires. For they affirm, that by means of it, the matter which occasions the disease is readily and quickly drawn off, both from the *primæ viæ*, and from parts more remote; or that the character, as they call it, which they place in the nerves as the proximate, or rather predisposing *, cause of fever, is removed and obliterated, and that thus obstinate fevers are extirpated. On the other hand, some dread the employment of emetics as pernicious, or adduce instances of their having been on many occasions absolutely useless. But I would choose a middle course; that is, that we should employ emetics when a great quantity of viscid or putrid fordes oppresses the stomach; or the gall-bladder, liver, and duodenum are swollen with vitiated bilious matter. Which is indicated by the preceding causes; bitter taste; nausea; weight at the sto-

mach, of which the patients complain particularly on awakening in the morning; yellowness of the eyes, face, or urine; loss of appetite; swelling of the hypochondria, or epigastric region. Sometimes, also, this kind of purging is required by mere duration and obstinacy of the fever, or by its happening at the autumnal period, as if some violent concussion were necessary to expel the febrile cause from the interior recesses of the viscera. But before the exhibition of emetics, we ought to weigh with ourselves whether the patient's temperament, age, strength, manner of life, conformation of the breast and head, preceding diseases, &c. permit their use. Let the mild ones be chosen, and when fulness of the vessels appears to be present, they should not be taken till the vessels be emptied by venesection †. Authors are not agreed as to the proper time of administering them. Some prefer the time remotest from the paroxysm, others that immediately before its commencement; and to these last De Haën also gives his vote †. But the spasms, and symptoms of derangement, attending the beginning of an accession, may be increased by an emetic in such a manner, as to give the physician reason to repent of his rashness.

* In all diseases pathologists generally establish a *præcæus*, or predisposing cause, to which, if the procatactica, or occasional cause is superadded, from the concurrence of both,

they say, arises the proximate cause. Van Swieten, (Com. ad § 755), in his Etiology of intermitting fevers, pursues this doctrine, and acknowledges some change, or *character*, in the nerves, which being present as a predisposing cause, fever is easily excited upon any slight occasional cause being applied. Moreover, he does not doubt that this *character* is sufficient without any fluid, ferment, or fomes, to recall the fever at stated hours. Therefore he seems in some measure to oppose the febrile fomes. His opinion was adopted by Albrechtus Thear (*De action system. nervos. in febr. Götting. 1774.*), and others more recently. But the arguments on both sides of this question may be consulted in Trnka. hist. febr. intermit. vol. 1. § 37. to § 52.

† If such a caution is neglected, not only the vessels of the lungs, but also those of the brain, may be lacerated. I found an internal hemorrhagy of the brain, in the body of a man, who, immediately after the operation of an emetic, growing stupified, died of a most severe apoplexy within twenty four hours.

† Rat. Med. T. xi. cap. 1.

116. Several, after Torti, condemn violent purging; Sydenham, just now quoted, had also condemned it; and ^{Disadvantages of violent purging.} with good reason: for what the sticklers for purging propose to themselves, namely, to free the first passages and viscera from vitiated fluids and obstructions, they scarcely ever attain. They rather waste the strength, weaken the tone of the bowels, increase crudity, and render the fever of longer duration, nay, more dangerous, especially if they are of the corruptive or

pernicious kind. But though Torti, taught from repeated trials, learnt this, he is not, however, one of those who reject all kinds of purging; as the mild, gentle, and cautious kind.

Mild and cautious
purging recom-
mended.

When, therefore, purging is indicated, we may use gentle remedies, and differently according to the nature of the fluids in a vitiated state, time of the year, the patient's age and temperament, habits and manner of life. In a bilious temperament, during the heat of summer, and similar cases, either simple whey, or boiled with tamarinds, or to which cream of tartar has been added, will answer the end. Likewise cream of tartar, in the quantity of an ounce, dissolved in two or three pounds of boiling spring water, and used by way of drink, proves very gently purgative. If acrid thin fluids in vain excite the stomach to empty vomiting, or the intestines to purging, and the matter is not swelled, by means of sweet oil of olives, or almonds recently expressed without the aid of fire, and drunk to the extent of three or four ounces in thin soup, such uneasinesses are remarkably allayed. But if a pretty thick or copious matter lingers in the *primæ viæ*, and the autumnal season, phlegmatic temperament, and other such things concur, the efficacy of the remedies will be much increased. Hence either neutral salts,

or bitter cathartics, or cassia, or manna, or conserve of roses, or lenitive electuary, or rhubarb, or the species of *Hiera simplex* of Galen, will be most proper. The celebrated Beccarius, my much respected preceptor, formerly used to employ a bolus, consisting of the flowers of cassia and conserve of mallows, of each two drachms, a drachm and a half of good rhubarb, which he said used to purge very agreeably. Sometimes we obtain our end by glysters alone, which are very safe, and as often as there should be occasion, may be repeated without inconvenience to the patient.

117. After cleansing the *primæ viæ*, advantage is usually derived from the employment of some of those remedies, which are opposed to the peculiar known vitiation of the fluids or solids, and, as it were, correct the remote causes, commonly called febrifuges, because they sometimes of themselves remove the fever. Among these a principal rank is held by simple whey, or alternated with decoctions of bitter herbs, and to be taken for several days on an empty stomach. Next come certain plants, as succory, dandelion, fumitory, agrimony, *carduus benedictus*, wild germander, lesser centaury, worm-wood, rue, white horehound, mother-wort, cinquefoil, hatchet-vetch; likewise, flowers of camomile *, tansey, bastard hemp agrimony †, mountain arnica ‡; as also,

Various febrifuges.

R 4

the roots of the wild prune, Persian apple-tree, Virginian snake-root, clotburr, gentian, the bark of the nut-tree ||, the second of the ash-tree, of the horse chesnut §, willow **, oranges, cascarilla, quassi-wood, or its root ††, cypress-berries, and all antiscorbutic plants, especially the trifolium fibrinum, from all which, decoctions ††, infusions, juices, extracts, tinctures, powders, electuaries, pills, and mixtures of various kinds, are prepared.

* Camomile was first celebrated by Necheptus, Actius, afterwards by Morton, Pitcairn, Cartheuser, Lange, and others. Vide Lange's Misc. veritat. fascic. 1. p. 79.

† Vide Saggi di med. di P. Paolo dall' Arme. P. 2. p. 202. nella nota.

‡ Collin. Arnicæ in febris vires, five observat. P. v.

|| Febure, in a note on Grant de febrib.

§ See the celebrated Anthony Turra's Lettera ed alcune osservazioni sulla febrifuga facoltà dell' Ippocostano, in which book is contained the history of this remedy, first recommended by Mistichellius, down to our own times, and its excellency is attested by a set of new experiments. But the year before there appeared a commentary by Jo. Francisc. Zulattus of Cephal, son of the learned Angelus, in which this very accomplished young man makes mention of twelve trials he had set on foot in the hospital at Padua, the result of which completely contradicts the observations of Turra. But, in making such experiments as these, it is by no means uncommon for physicians to differ in opinion from the most trifling causes. If Zulattus, however, denies a place among the febrifuges to horse chesnut, yet, on the authority of Jo. Marsili, professor

of botany at Padua, and induced by many trials made at both Padua and Parma, he contends that the *materia medica* is enriched with another febrifuge, namely, bastard hemp, the remarkable febrifuge power of which he does not hesitate to extol greatly. See his *Osservaz. sopra la facolta febbrifuga dell' Ipocostano*, Firenze, 1782, p. 17. Likewise, Rudolphus Buchhave has endeavoured to extend the class of antifebrile remedies. For, in the year 1781, at Copenhagen, he published his *Observationes circa radicis Gei. Urbani, sive Caryophyllata vires in febris, precipue intermittentibus, aliisque morbis institutas*. He has endeavoured to shew the decided efficacy of this new remedy, in the history of an hundred and twenty three medical cases. If the number of experiments, the credit due to the author, and the confidence he every where manifests, are considered, no one would entertain a doubt about the antifebrile virtue of the herb bennet. But I know not by what unlucky accident it happens, that the remedies which are elsewhere in high estimation, shortly lose all their celebrity among us in Italy. I regret much that the same thing has happened with regard to the *Geum urbanum*, which, after being received and tried in various forms, still never answered our expectation. I except, however, the celebrated Fel. Astius, physician to his majesty at Mantua, who experienced the wonderful antifebrile power of this remedy in intermitting fevers of long continuance, which were very apt to return, and no longer yielded to the bark. See his *Mem. epist. interno le Malattie, corse in Mantova nel 1782*, inserted in vol. vii. *Opuscul. Med. Prat.* p. 98.

** The species of willow, the bark of which they recommend, is the *common white willow*. The bark is peeled off from the branches of trees three or four years old, of three or four inches thick, and when dry is reduced to powder. But one or two scruples of this powder ought to be given every hour during the interval. Edmund Stone mentions his having thus effected a complete cure in more than fifty cases, without any bad consequence ensuing. In obstinate quartans, and other

diseases which did not yield to the remedies employed, he added a fifth part of Peruvian bark to the pulverised bark of willow-tree, by which its powers are so much increased, that patients are quickly restored to health. And no kind of preparation before the use of this remedy, is requisite. Phil. Transf. vol. liii. p. 195.

†† See a Commentary in which the powers of the quassia are considered, by Sebastian Severus, formerly a pupil of mine, published at Pavia in 1776. But the author's experiments prove the antifebrile powers of the quassia to be very trifling.

‡‡ De Haën, for the cure of intermitting fevers, recommends the following decoction :

R. rad. gramin.

Taraxaci āā ℞ss.

Minut. concis. et contus. indantur in aq. puræ, q. s.
Decoq. per bihorium.

Colatur. prælo express. ℞ij. add.

Oxymel. simp. ℞ss.

Sal. Polychrest. drachm. vj.

M. detur uncia quovis bihoris.

Vide Rat. Med. Part. xi. cap. 1.

118. To these, occasionally, should be added the
Neutral salts. salts called *digestive*, salt of tartar, of wormwood, vitriolated tartar, sal polychrest, those composed of two, as the arcanum duplicatum, vitriolated nitre, sal Sylvii, Glauber's salts, soluble tartar, and the like. Many other remedies are enumerated by authors, a particular detail of which would be tedious. We must not, however, omit to mention a few of such as are

pretty generally employed, and by long experience have been found serviceable. Such is the specific of Crollius and Riverius, composed of a fixed alkali and the vitriolic acid *, or that of Morton, composed of flowers of camomile, salt of wormwood, and diaphoretic antimony †, with which he mentions his having got the better of those fevers, which had resisted the Peruvian bark, which were perhaps secondary or symptomatic and spurious. Sal ammoniac is also recommended, to the extent of two drachms given two hours before the accession ‡, camphor hung to the neck, or taken internally, parsnep-seeds, to the extent of one drachm, likewise calcined egg-shells to the amount of half a drachm, twice or thrice a-day, the utility of which is attested by Sauvages || and others. In Spain the febrifuge of Audonius, composed of a strong decoction of coffee beans and the juice of the citron fruit, is very much recommended, and in daily use §.

The specific of Riverius & Crollius.

Morton's specific.

Sal ammoniac.

Parsnep-seeds.

Audonius's febrifuge.

* It is thus prepared :

R. aq. cichor.

Sal. absinth. alcal. drachm. sem. spir. sulph. aut vitriol. gutt. xii. vel. scrup. j.

M. hauriatur duabus horis ante accessionem.

† Morton's specific is thus described by him. (*De febrib. intermit. cap. vi. exercit. i. p. 50.*)

R. Flor. chamæmel subtiliss. pulv. (plus minus pro ætate), scrup. 1.

Antimon diaphor.

Sal. Absinth. āā ʒss.

M. f. pulv. sumendus in haustu cujuscunque jularpii temperati; aut in formam boli, aut pil. cum mucilag. gumm. tragacanth. redactus, 6ta q. q. h. per biduum vel triduum repetendus.

See the histories of fevers cured by this remedy, in cap. ix. p. 115. et. seq. of his work.

‡ It proves hurtful to those of a warm constitution, and is very apt to convert intermitting into continued fevers; which both I myself and others have frequently observed.

|| Nosol. cl. 2. Feb. intermit. ord. 3.

§ Audonius's febrifuge consists of the following ingredients:

R. Caffee tost. et trit. ʒvi. coque in aq. ʒiij. ad dimidias. Resid. decantat. add. succi citri ʒij.

M. Calide propinatur ægro jejuno apyrexie tempore.

It is said also to prove laxative.

119. Werlhoff assures us, that the animal oil of Dippelius *, taken to the extent of twenty five drops, is no despicable remedy; and Linnæus † affirms that by means of it he has removed a tertian. Likewise mineral sulphur taken from half a drachm to one drachm, several times before the

Some other remedies are celebrated.

accession, is reckoned among the antifebrile remedies by Ettmuller, Ruland, Riverius, and others ‡. Among these some place is due to the *Kermes mineral*, half a grain of which, according to Geoffroy ||, taken by children labouring under intermitting fever, twice, thrice, or four times a-day, is of remarkable advantage. Astringents likewise are extolled. After Dioscorides and Gerzebius, Senac employed the decoction of plantain to remove obstinate fevers §. Reneaulmius ** employed galls from half a drachm to a drachm every quarter of an hour. Crude alum from half a scruple to a whole one in a decoction of lesser centaury, given five hours before the attack of fever, is highly recommended by Hartmann, Grunlingius, Ettmuller and others ††. But I would consider it as wiser to abstain entirely from such styptic remedies. Reason shews that they are neither inert nor innocent. Lastly, water alone taken in great quantity for two or three days, without any other kind of aliment, was proposed as a very sure *antipyretic*, first by the ancients, and afterwards by Senac ‡‡ and Didelotius |||. Some §§ also prescribe opium and theriaca before the accession. Some, as Friccius, even advise the use of certain poisons, especially arsenic, nux vomica, hemlock, St Ignatius's bean, spiders, and other remedies, which are either absurd, or nauseous, as urine of men

or cattle, or pulvis pyrius, or pepper. But experiments instituted for the purpose, have proved them to be either noxious or nugatory, especially arsenic, from the use of which De Haën, Störck, principal physician to the Emperor, and Quarin, have *** observed a great many almost incurable disorders to rise †††.

* Observ. de febr. sect. 2. § 3.

† Differtat. de morb. adven. in America vexantibus. § 84.

‡ Trnka l. c. P. 2. sect. 2. cap. v. § c.

|| Mat. Med. T. 1. p. 126.

§ Trnka l. c. c. viii. § a.

** Acad. Roy. des Scienc. des Paris. 1711.

†† Trnka l. c. § f. p. 508.

‡‡ L. c. lib. 3. cap. 8.

||| Avis aux Gens de la campa. chap. 20. p. 155.

*** Berryat, because he thinks it more probable that intermittents arise from spasms than obstructions, especially when they come on with great shaking, therefore gives an opiate to remove the spasms. But he employs the liquid laudanum of Sydenham, in infants to the extent of six drops, in adults to twenty, in a dilution of centaureum minus, an hour before the commencement of the shivering. If the patient confine himself to bed, it promotes sweating. He says that in this way, he himself has cured intermittents which had bid defiance to the Peruvian bark. V. Comm. Lips. vol. vi. P. 3. p. 517. 518. But even this is an unsafe remedy. I have known that remedy give rise to incurable symptoms. Morisot, nay, Deslandes, taught by many years experience, have lately rejected the treatment recommended by Berryat. Vid. Journal de med. Janvier 1781. p. 23.

††† De Haën Rat. Med. T. xi. p. 64. 65. Störck. Ann. med. 1. p. 79. 80. Quarin. febr. medend. c. xii. p. 138.

120. Besides those already mentioned, certain topical remedies are not only recommended, but by some are held in high estimation. I shall here take notice of only two of the applications, called *epicarpia*, the utility of which Morton asserts to be confirmed by experience. The one consists of equal parts of Venice turpentine, and pulverised olibanum; the other of the greatercelandine, and rue, pounded with a proper quantity of foot, Venice soap, and sea-salt, and beat up with very strong vinegar. Each of these should be applied to the wrists, two hours before the coming on of the paroxysm. Nor must we neglect to mention, that some modern physicians, of no small reputation, recommend rubbing the whole body with warm linen for some time before the accession, and next administering a sudorific draught, that by exciting a sweat in this way, the cold may be prevented. Störck * twice experienced the happy effects of such a practice.

Topical antifebrile remedies, or those called *epicarpia*.

* Ann. med. 2. p. 161. et seq.

121. Lastly, it is of great consequence to attend to the proper treatment of the patient. At the beginning of the accession, during the cold stage, the patient must be covered with a great deal of

The regimen during each St.

cloaths; and dry, warm fomentations must be applied to the parts, which feel particularly cold; in such a manner, however, as Celsus observes, that very great heat may not be produced at once, but in a gradual manner*. Most practitioners disapprove of allowing the patient to drink, although he be tormented with the most urgent thirst. For by indulging in drink, especially cold drink, and in great abundance, the cold is rendered not only more troublesome and of longer continuance, but also nausea, vomiting, anxiety, and other internal derangements occur. Nevertheless, when the thirst is intolerable, lukewarm drink may be given, but with a sparing hand, to moisten the fauces, to dilute the morbid matter, and expedite its excretion, and to relax the spasmodic contractions of both the internal and external parts. The same effects seem to be produced by the stimulant and aromatic liniments, with which the pit of the stomach and spine of the back should be anointed when warm. Nutmeg oil, balsam of Peru, distilled oil of wax, amber, turpentine, lavender, and similar balsams, are usually fit for the purpose. But calefacients, on account of their aggravating the fever, ought not to be taken internally. When the heat, however, has begun to be universally diffused, drink may be taken more largely, but it ought to be acidu-

lous, temperate and antiphlogistic, especially if the body be very warm. But, after some hours, if sweat does not break out, or goes on slowly, and warm drink does not call it forth sufficiently, it must at length be assisted by infusions or decoctions of camomile, black-berried elder (*sambucus*), lime-tree, arnica, or the tops of the *carduus benedictus*, lesser centaury, germender, and the like.

* De Med. l. 3. ch. xi.

122. Nor is it of less importance in what manner the diet of patients labouring under fever should be regulated. Regulation of the diet.
In general, the shorter the intervals are, the more sparing should be the diet, and the longer they are, the more liberal ought it to be. No food should be allowed when the fit is about to come on, far less during its continuance. Otherwise vomiting, anxiety, or exacerbation and protraction of the fever, are the consequences. Nor is it proper to indulge in sleep at that time, but at a time as distant as possible from the paroxysm, and only during the remissions. When the fever has begun to remit, or (which is safer) when the paroxysm is now finished. the Italian practitioners allow soups and soft boiled eggs. But when the disease is of longer continuance,

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they give the patient some animal food and wine and water on the days free from fever. For experience has shewn, that in these fevers, when they prove tedious, too sparing diet is hurtful in weakening the patient. It is likewise proper, on the days when the *apyrexia* occurs, that the patient should take gentle exercise, especially before eating, or should have recourse to friction, to prevent prostration of strength in the solids and viscera.

123. In this way generally the benign intermittents, and those called *depurative*, are cured; nay, it frequently happens, that, by the proper regulation of diet alone, after having gone through a few paroxysms, they usually become milder, and at length altogether disappear. But if this does not happen, and the fever is protracted; or if it takes place in pregnant women, or in those who have recently been brought to bed; or if the fever shews itself to be of the *corruptive* or *pernicious* kind, it must immediately be cut short by means of the bark, which in point of antifebrile virtue excels all other remedies.

When this invaluable remedy was first discovered, two drachms of the powder were added to a few ounces of strong wine, and taken a couple of hours before

When the bark should be used in the benign kind.

Of the use of the bark.

the accession, even though a severe one, when the fever was of the double kind. That accession was not checked, but the ensuing correspondent one was prevented. If the bark was of the best kind, and repeated twice or thrice on the whole, it kept off the remaining accessions. But if it was not, the dose required being augmented, that the increase of its quantity might compensate the defect of its quality. Hence, after repeated trials, it was found, that the bark, to produce its effect, requires no less a time than twenty-four hours. On which account, it was not given at the approach of the accession, and with good reason, as in that case it is often rejected by vomiting, but as far as possible from the commencement of the succeeding paroxysm, in order that it might have sufficient time to produce its effect.

124. But the bark by degrees acquired such celebrity, that at length it was univer- Its adulteration. sally applied not only to the cure of fevers, but likewise to that of other diseases. Hence, the abundance and goodness of it began to be diminished; for the vendors of it, desirous of increasing their gain, adulterated it with various foreign substances; on account of which its medicinal powers began to fall not a little short of the reputation it had acquired. It became necessary, therefore, to increase the dose imperceptibly

that augmentation of the quantity might compensate the deficiency of its efficacy. Nay, in the present times, the quantity of the medicine, which Torti found to be of the utmost service to mankind in overcoming intermittents of the pernicious kind, although sufficiently greater and stronger in proportion, when compared with the usual dose once employed, on account of its being rendered weak and inert by adulteration, or being too long kept, not unfrequently does not answer our expectations. The manner of administering the bark, therefore, is so various, that it is scarcely possible to find two physicians who use the same mode of prescribing it.

125. Among most practitioners, however, it is agreed, that in order to stop the progress of the benign intermittent, three or four drachms, or at most three fourths of an ounce, properly divided, and taken at several times, not very distant from each other, are sufficient. But, in benign fevers, it is preferable to administer the bark at least twice a day, until an ounce, or an ounce and a half, has been taken. And, as these fevers, after they have been removed, are very apt to return, a relapse ought to be prevented by continuing the use of the bark, and by giving half a drachm or a whole one for several days,

The dose now employed in the benign intermittents.

until another ounce has been consumed. And it is even useful, at proper intervals, to repeat the same method of treatment, for forty days together; after the expiration of which they scarcely ever return. But, when the fever is not only benign, but also slight and troublesome merely from its continuance, then the bark may be given in much less quantity, that, like an alterative, it may remove the fever entirely.

126. But the fevers called *corruptive*, require a larger dose*; and, therefore, during the whole interval, the fourth part of an ounce may be taken twice

The dose requisite in the corruptive fevers.

or thrice, until the fever goes off. When the fever is completely removed, it is advantageous for the patient still to continue to take one drachm, morning and evening, until two ounces have been used. Lastly, in the pernicious kind, and in those verging on acute

Still greater in the pernicious.

fevers, a still greater quantity of the medicine must be employed at each time; for the regulation of which, however, rules accommodated to every case cannot be laid down; but it ought to be varied according to particular circumstances. In general, however, it

may be observed, that in the fevers called *perniciosa comitata*, (69. 70.),

In general how the bark should be employed.

in order to prevent the next accession, which may be eventual, an ounce of bark is requisite, and

that even that dose is sometimes insufficient, since experience has shewn, that an ounce and a half, or even more, is necessary to remove the paroxysm and fever entirely. But, according to the longer or shorter continuance of the interval betwixt each paroxysm, as Torti has very properly remarked, the whole remedy should be differently divided. When the interval is rather short, immediately at the beginning of the remission, half an ounce of the bark may be taken at a draught, when there is considerable alarm, even six drachms may be given, next four more, or six, at proper divisions during the remaining time, whether of the remission or intermission; in such a way that each dose may be gradually diminished, and the smallest given last, that is, a few hours before the accession of the fever. But when the apyrexia is of longer duration, the bark may be divided into several portions, and a greater time may intervene betwixt each; so that the first and second dose may not exceed three drachms, and the remaining ones two. For the whole skill of the physician consists in dividing six drachms, or an ounce or an ounce and a half of the bark, which are necessary to remove the *febris perniciosa comitata*, in such a manner, that before the arrival of the fatal accession, which is expected and ought to be prevented, they may be entirely consumed; observing this caution,

however, that the first dose may exceed every subsequent one. For, were the opposite plan to be pursued, the medicine would not produce the desired effect, on account of the first dose being incapable of stopping the fever, although time be given for its action, while the following doses come too late to make head against the febrile cause.

* Rammazini, in the epidemic that prevailed in the country an. 1690, mentions that the bark did not entirely answer his expectations. But the fevers to which he alludes were of the *corruptive* kind, and were combined with depraved chyli-fication. Had he first cleansed the *primæ viæ*, and immediately after administered the bark in great abundance and for a long time, as the nature of these fevers requires, he would probably have had no reason to repent of having given the bark. I myself experienced the truth of this in an epidemic of a very similar kind, which arose from the very same causes.

127. Nearly in the same way may we vary the use of the bark in the pernicious fevers called *subcontinuae*, on account of the continued and acute form they assume. For, in proportion to the quickness or slowness with which they proceed to the continued acute form, ought the bark to be more copious or sparing; which also should occasionally be premised with repeated bleedings, and other general means, as we have directed already (106. &c.). If, therefore, the heat, slight thirst, and other symptoms (71. 102.) already

How it should be
given in the
subcontinuae.

enumerated, still remaining on the day of the

intermission, if the diminution of cold, and protraction and severity of the paroxysms, point out that the fever is become of the nature of the *sub-continua*, while, at the same time, the original course is not rendered altogether obscure,—a circumstance which is peculiar to them,—two drachms should instantly be administered in the morning of the day when the apyrexia happens, in the evening as many, but on the day of the arrival of the paroxysm, a few hours before it comes on, one drachm, or a little more, should be given. At length, when the fit is beginning to remit, two drachms should be given again, and so on, until the quantity of two ounces has been taken, and the fever discussed. It is by no means proper, however, at this period to give it in wine, but in any kind of water which is best accommodated to acute diseases. But if its continuance has become more confirmed, and the courses more obscure, while more violent symptoms come on, namely, tremors of the joints, convulsive motions, slight delirium, dark-coloured urine, tremulous voice, hiccup, and the like, we must oppose them with the bark in a more powerful form. In such a case, let the first dose of bark be of three or four drachms, the next of two, then a drachm and a half, morning and evening, lastly, one drachm, gradually diminishing the dose, until

an ounce; or an ounce and a half, has been consumed.

On the fever being removed by the bark, we ought not immediately to desist from employing it, but should continue it for some days, gradually diminishing the dose, in order completely to eradicate the fomes.

On the fever being removed, the bark still to be continued.

How long this should be done, a cautious practitioner, by a careful attention to circumstances, will be enabled to judge. On the whole, however, as much may be given to prevent its return (which is very apt to take place), as had been used to check its progress. But it is better to divide it into four parts, of which one every ninth or tenth day, divided into several lesser doses, and given at proper intervals, may be taken. Much in the same way should it be administered in the fevers, which, from the accessions coming on prematurely, are converted into continued fevers, and in order to be distinguished from those properly called *subcontinua*, are usually named (71.) *subintrantes*.

How it ought to be given in those called subintrantes.

129. It is usual among physicians of several countries to give the bark sparingly, but often repeated, namely, to the extent of a drachm every third or fourth hour, until the fever ceases, or to the same length every day, for several weeks, to prevent

Whether it be preferable to give it sparingly.

the return of the fever *. But experience has shewn, that it is employed with more utility and certainty in a larger dose each time, although at more distant intervals. For in the former manner, since it is inadequate to overcome the febrile cause, it either does not check the fever, or, during the use of the medicine, although the fever cease, it does not prevent its relapse: We must take into account, that the sleep is interrupted in a very unpleasant manner, and that a proper time for taking food is not so easily procured. All which inconveniences are most readily prevented by the other mode just now mentioned. But it frequently happens, that when we employ a greater dose, a diarrhoea is the consequence. If this takes place after the first doses only, as generally happens, we may allow it: but if the looseness proceeds farther, or grows worse, in that case it should be checked by the *Diascordium Fracastorii*, the theriaca Andromachi, or the laudanum of Sydenham, by themselves, or prudently combined with the bark; for, during looseness of the belly, the bark would descend and pass off before correcting the cause of the disease.

What is to be
done when a
diarrhoea oc-
curs.

* This plan, if it should ever be used, ought to be tried only in the case of children, peevish women, and squeamish patients.

130. Those physicians, therefore, consult the

safety of their patients very badly, who propose conjoining the bark with cathartics, or turn their attention principally to its passing off as quickly as possible. Sydenham *, and Torti †, and many others ‡, have observed a fever already checked by giving a cathartic, again brought back by means of an emetic. This is denied by others, who contend, that the fever is more happily removed by the combination of cathartics with the bark, to draw off the vitiated humours, or to remove pretended obstructions, or to obviate the inconveniences which they suppose to arise from the use of a medicine composed of the bark of a tree, and of an astringent nature. But taught by experience, I prefer the practice of the former set, and, if purging is indicated, I usually give a gentle laxative, and at different times, as I have proposed above (115. 116.), before having recourse to the bark. I then debar my patients the use of cathartics and all those things which occasion looseness, namely, fruits, pot-herbs, sweet-meats, and the like. But if the belly be very much bound, it should sometimes be relaxed; clysters alone, or a few grains of rhubarb, will produce this effect without any bad consequence. I will not, however, omit to mention, along with Sydenham § and Van Swieten ||, that the autumnal fevers, after yielding to the

The bark ought
not to be mixed
with cathartics.

bark, often require purging; for, when we neglect attending to that, they are apt to return, or, as they think, are succeeded by other diseases. But Sydenham only advises us to commence the purging forty days after the fever has ceased, and employ some anodyne every evening, that the fever may not be brought back in consequence of the irritation attending the purging. It is likewise proper for some weeks to beware against too great a quantity of food, and against the cold air, that depravation of the digestion, or checked perspiration, may not endanger a return of the fever.

* Epist. 1. responfor. p. 331.

† L. c.

‡ Geoffrey Mat. med. T. 1. p. 280. Swieten, 757. Gorter comp. med. Tr. 52. par. 33.

§ Ib.

|| Ibid. § 766.

131. The Peruvian bark, in whatever manner it is employed, whether in the form of dilution, decoction, tincture, extract, elixir, fyrupe, electuary, pills, or powder, either taken by the mouth or injected, is a remedy which produces the most excellent effects. By the most accurate observation, however, it is ascertained, that no preparation is superior in efficacy to the simple powder, provided it be fresh * and made of the thinnest

The powder preferable to every other form.

bark. But particular circumstances sometimes render one form more convenient and pleasant than another; in which case the preference must be given to that which is found most convenient.

And notwithstanding that it undoubtedly acts more powerfully

When the bark
should be given
in another form.

when taken by the mouth, still it is not void of effect, though a slower one, when thrown in *per anum*. Then a strong decoction or extract of it diluted in water or milk is best adapted to this purpose, and proves of no small service, particularly to boys, who sometimes have an invincible dislike to all sweet and more elegant preparations, or grown up persons, who are troubled with continual vomiting, either from the disease or the remedy.

* The powder of Cinchona, although preserved in a box, or in close vessels, loses a great deal of its efficacy. It, therefore, ought to be pulverised for immediate use only. A very accurate account of the botanical, chemical, and medical qualities of the bark, with the marks of its goodness, is given in Jo. Frid. Mauttiii Dissertat. de cort. Peruv. contained in Sandifort's Thesaurus Dissertat. Programmat. &c. v. 1. p. 227. Rotterdam. 1778. Diss. 4. The marks by which the genuine bark is characterised are the following: Externally it ought to be rough, brown, here and there marked with pale spots, sometimes covered with a grayish moss; internally smooth and polished, of a cinnamon color, but rather darker, like that of iron rust; broken into pieces and glittering in the sun, as if it contained crystals of nitre; of a musty and slightly aromatic smell, of an

aromatic bitter taste, slightly styptic; friable between the teeth, neither viscid, glutinous, nor ligneous. Moreover, it ought to be taken from the small branches of young trees. On the other hand, it may be suspected that it is not genuine, if the external surface is white, or entirely yellow, occasioned by the venders of it, to increase their profit, employing turmeric root, to make all other barks resemble the Peruvian bark. If its taste is too bitter, it is a proof of alpes having been employed, that it may not appear to have become too old. We ought entirely to reject that which is old, worm-eaten, corrupted, too thick and ligneous, and likewise powder which has lost its efficacy in consequence of being too long kept. For an account of the various species of the bark and modes of adulterating it, and likewise its powers and uses, may be consulted Murray's *Apparat. Medicam.* vol. 1. under the article of *Cinchona Officinalis* Linn. or *China China*, n. 201. p. 546. where a long list of writers are enumerated. It may be proper likewise to peruse the observations on the same subject contained in vol. 3. *Reg. Soc. Med.* part. historic. p. 252. et seq. for the year 1779, in which mention is made of a better kind of bark of a red color, formerly employed, but afterwards thrown aside among us on account of its scarcity. The employment of it has been again resumed in England, in consequence of the warm manner in which it was recommended by Dr Saunders.

132. We must pay no attention, therefore, to certain ignorant people, who, for various reasons, call in question the efficacy of this excellent remedy; nor is any credit due to the reproaches of some physicians, who have passed sentence upon it from pre-conceived notions. The number of those, however, is so inconsiderable, even in Ger-

It is an innocent
remedy.

many and France, where it was formerly violently opposed, that experience, the best guide in medicine, may be said to have silenced its enemies. So far from occasioning obstructions and infarctions, if any such, especially of long continuance, have arisen from the fever itself, it gradually resolves and removes them. So far from injuring the stomach, except in a few cases *, it restores its healthy tone. Nor does it simply allay fever, but completely eradicates it, provided it be given in sufficient quantity and continued a sufficient length of time, and the crises, which are undoubtedly promoted by it †, are not retarded by neglecting the regulation of the diet.

* Sometimes such is the sensibility, or peculiarity, of the stomach, that in fact the bark cannot be retained, unless it be somehow artificially prepared. In that case, it is often taken more safely in the form of an infusion or extract added to some mucilaginous or demulcent substance.

† It promotes sometimes one excretion, sometimes another, but in particular it has the effect of increasing the perspiration. Albertin. Comment. Acad. Bonon. T. 1. p. 405. Gorter. Compend. med. Tr. 52. § 27.

133. It may be said, however, that such as are cured by means of the Peruvian bark are not ensured against a relapse of the complaint. But a relapse of the disease is neither an uniform occurrence, nor is it a fault peculiar to the bark, since

The relapse of fever not to be attributed to bark more than other antidotes.

other remedies, to which intermittents yield, are liable to the same objection. When the complaint, therefore, returns, after having been cured by this remedy, the efficacy of the bark must not for that reason be called in question. I am inclined to believe, that when a relapse of the complaint takes place, it proceeds either from the physician's fault in having employed the bark after being too long kept, or having given it in too small quantity, or from its use not having been continued a sufficient length of time, or from the patient's inattention to the proper regimen. It is highly

The causes of the
complaints re-
turning.

probable that this likewise frequently happens from a continuance of the application of the remote causes, from which the fever originated, as the disposition of the air and climate, bad kind of meat and drink, a vitiated state of the fluids, or an old taint of the viscera; nor ought it, therefore, to occasion much wonder, if, as the same causes at first excited the complaint, in the same manner they should again recall it. Hence it very frequently happens, that perfect health is not restored, unless by change of country, food and drink, travelling, riding on horseback, and other modes of gestation, and by opposing the faulty conditions of the body which keep up the disease, by means of aperient, antiscorbutic, chalybeate, and antivenereal remedies. Hence we may be probably

able to account for the most obstinate intermittents, both periodical and erratic, *vagæ* and *recidivæ*, or chronic, being overcome, as we are assured by not a few physicians, by conjoining with the bark the antiscorbutic juices, neutral salts, steel, sweet mercury *, &c. otherwise by no means necessary †. I have also known instances of these fevers being removed by medicated waters, both salt and cathartic, acidulous and prepared with iron. I once completely removed a tertian of six months standing by prescribing the liberal use of St Christopher's water, which is reckoned among the salt preparations. Nor is it an uncommon thing in some parts, for the peasantry to recover from the summer fevers, prolonged to the autumnal season, merely by continuing the copious use of fresh-pulled grapes, wet with the morning dew.

* Gorter (*Comp. Med. Tract.* 52. and 32.) observes: "The copious use of Peruvian bark stops fever, without endangering a return." I have again and again experienced the truth of this remark. It is confirmed by the testimony of Gusman Galeatius, who (*Comm. Inst. Scient. Bonon. T. v. P. 2. p. 224.*) in certain difficult cases was obliged to go the length of five or six ounces, or even farther, to break the force of the disease. In the epidemic of 1765, which I have described elsewhere, (*Sagg. di Med. Prat. di P. P. Dall' Arm. P. L. p. 37.*), it was necessary to employ the same quantity.

† Sweet mercury as a remedy in intermittents, besides Riverius, is recommended by Schultz, Vogel, Buchner, Ludwig,

and others; but its efficacy is said, by Frid. Casimir. Medicus, to be particularly conspicuous, when, at the same time, a venereal taint is present. Nor must crude mercury be deprived of its praise. Joseph Benuenutus says, that during the epidemic prevalence of pernicious fevers, which were extremely apt to degenerate into the continued petechial species, he found the bark alone inadequate to overcome them; but that by adding mercury it become extremely efficacious. He employed a scruple of the mercury to a drachm of the bark, and affirms, that, in this way, its virtue was greatly increased. It may be proper to consult his *Dissertatio historico-epistolaris ad Cl. virum Bartholomeum Beccarium, qua epidemica febres in Lucensibus Domini quibusdam pagis grassantes describuntur*, &c. Lucae. 1754. A few years ago Dumonius first added to bark a large dose of tartar emetic, namely, fifteen or even twenty-five grains to each ounce, to remove very obstinate quartans. His example was followed by a good many others. But all were surprised that so large a dose of tartar emetic excited neither vomiting nor purging. It is proper, however, to know, that the bark, like other astringents, decomposes the tartar emetic, and precipitates its reguline part from the attraction of the acid of the tartar. The experiments proving this are related by Cornettus, in vol. iii. of the Roy. Med. Soc. of Paris, p. 249. Hence the emetic power of the tartar emetic is completely destroyed, in the same manner as when it is well mixed with white magnesia, or other absorbent earths.

‡ Gorter (l. c. same §) says, "That nothing should be added to the bark, unless some symptom require us to do otherwise." But as this is frequently the case, unless attention be paid to the symptoms, the bark often proves ineffectual. We must, therefore, obviate these symptoms by proper means, or we must conjoin such remedies with the bark, before it can answer our expectation. This is also noticed by Galeatius, in the passage already quoted; because in a tertian accompanied with dysentery he was obliged to employ both bleeding, and a species

of bark called cascarilla, and paregorics, besides the common bark, to remove the complaint, although the dysentery might then more properly be said to be combined with the tertian, than to be a symptom of it.

134. For it requires the assistance of no other substance when the fevers are pure, simple, primary and uncombined, and when the patients have been properly prepared for it by bleeding, purging, and other means. For upwards of thirty years I have been in the practice of using this invaluable medicine; nor have I ever, during all this time, in the cases which I attended, observed it prove ineffectual, or give rise to the bad consequences falsely laid to its charge. Nor ought it to be the less esteemed because it is not known in what manner it operates; for it appears to me a matter of absolute indifference whether its efficacy be ascribed to an acid, or to an alkaline salt, or to both, or to the gummy or resinous principle with which it abounds, or to its antiseptic or styptic power, or to its acting on the nervous system, or on the stomach, or to one way more than another. This only we know for certain, that, although well informed physicians confess their ignorance of its *modus operandi*, in the hands of an experienced person it is the safest and most efficacious remedy we have; and that men of the highest learning

For the most part
the bark re-
quires no addi-
tion.

have completely vindicated it from the aspersions of the ignorant *.

* Almost innumerable authors have written on the powers and right use of the Peruvian bark, not only in fevers, but also in other diseases. But I consider the work of J. H. Rahn, M. D. as far before the rest; the first volume of which, entitled *Adversaria Medico Practica*, published at Turicum in the year 1779, is written with the greatest learning and judgement, to shew "the salutary and noxious use of the Peruvian Bark." It must be observed, however, that in this volume, consisting of 408 octavo pages, is contained the first part only, in which he treats of the use of the bark both in intermitting and continued fevers of every kind. I am in eager expectation of the second part, concerning its use in other diseases, in which, for the good of mankind, an equal display of learning is expected.

THE
QUOTIDIAN INTERMITTENT.

135. **T**HE nature of this fever * is implied by its name. It is a fever having similar accessions and intermissions every day. It is usually divided into the *true*, or *exquisite*, and the *spurious* or *bastard* kind. Each of these seems to be indicated by the time of the attack ; but authors are not agreed as to this particular. For some, and among those most of the ancients, are of opinion, that they go through their course in the afternoon, evening, or at night ; while others, especially the moderns, name that fever *exquisite* which comes on and goes off in the morning, and that *spurious* which appears and disappears in the evening. It would probably be better, with Hippocrates, to call the former the *diurnal*, and

the latter the *evening* or *nocturnal* kind. But since the evening or nocturnal fevers are generally of longer continuance than those which come on in the morning or during the day, and, if the general symptoms are considered, differ not a little from the nature of the other intermittents, so the latter seem more frequently to deserve the name of *spurious*, and the former that of *exquisite*.

* Some deny the actual existence of a quotidian intermittent, because they have not had an opportunity of seeing it. But the accurate observations of others as well as myself shew that they must have laboured under a mistake.

136. A quotidian, again, is either *simple* or *double*, and perhaps sometimes *triple*, according as it recurs once, twice, or thrice within the twenty-four hours. I myself have more than once observed the *double* quotidian. It is proper to remark, however, that in it very seldom does any real apyrexia intervene betwixt the first and second accession. Moreover the differences of the other intermittents, are in common to this kind also; it may, therefore, be either *benign*, or *pernicious* *, and *malignant*; or *corruptive*; *primary* or *secondary*; or *symptomatic*; *periodical*; *erratic*; of the kind named *larvata*; *partial*; *sporadic*; *endemic*; *epidemic*; and so forth.

* A remarkable instance of a *pernicious* quotidian is to be found in the *Diarium Medicum*, 1757. Aug. p. 98. The author of the work itself, Vandermond, has recorded it. It is shortly as follows: A young man of twenty, otherwise in good health, was attacked with several fits of a quartan, which afterwards passed into a tertian. In consequence of blood-letting, vomiting and purging being employed, the fever was removed for two or three days. But it was immediately succeeded by a continued quotidian, having regular paroxysms in the evening, attended with violent delirium and great heat. In the morning, that is, during the remissions, the patient seemed motionless, stupid, and nearly deprived of the use of speech. His whole body was affected with rigors, except that now and then he was attacked with *subfultus tendinum*. He was not affected with any preternatural heat, his pulse was weak, small, and very quick; his abdomen smooth and rigid; his *penis* stretched, like a cord, but not swelled; his eyes fixed; his words interrupted, broken and incoherent; he complained of difficulty in making water; his mouth was parched; his tongue, when he chose to shew it, tremulous, and convulsed in various ways; his belly bound; his urine sparing and very seldom passed; and these symptoms continued to distress him for several days. By means of mild, relaxing injections, watery, bland drink, Homberg's sedative salt, and the copious use of the Peruvian bark, employed during the remissions, the fever, which arose from an intermittent, with all its bad symptoms, was removed. This species was named by Sauvages *Amphimerina Spasmodica*. To me it appears to have been a quotidian of the species of *subcontinua perniciosa*, both on account of its constancy, and the delirium and spasms with which it was attended. Likewise Casimirus Medicus saw a quotidian of the *pernicious* kind attended with spasms and convulsions, and long protracted, and another of the kind called *subintrantes*. (See Comm. Lips. Suppl. 2. ad Decad. 2. p. 204. et seq.). Before him Galeatius described a curious quotidian, attended with deep sleep, and a particular

convulsive and spasmodic affection, referable to the species of fevers called *perniciosa comitata*, and which he cured by speedily having recourse to the liberal employment of the Peruvian bark. See his own account of it, vol. v. part 2. Comm. Acad. Bonon. p. 220. I shall beg leave here to subjoin an account of a *pernicious quotidian*, attended with a white intumescence of the skin, mentioned by Störck, (Ann. Med. 2. p. 163.) Every day at the same hour, the patient at first perceives a sense of creeping, and next of tense and lacerating pain. This is succeeded by a white swelling of the whole skin, but at the same time it is soft and flaccid, attended with great anxiety at the breast, excessive thirst, and a small, unequal, intermitting pulse. As the paroxysm increases in violence, distressing delirium, and constant tossing of the limbs succeed. These symptoms in general continue five or six hours; after which sleep spontaneously comes on, a copious sweat breaks out, and the intumescence of the whole skin, together with the fever, disappears. After sleep the patients remain very weak, with a slow, weak pulse, and loss of appetite. Saturated infusions of wormwood, lesser centaury, wild germander; fumitory, blessed thistle, elecampane, pellitory, and gentian, are said by the author to be generally serviceable. But after a few paroxysms, when he has seen the strength much reduced, he owns that there was occasion to employ the Peruvian bark, which immediately proved of such advantage, that not only did the fever itself disappear, but likewise the whole swelling, and health and strength were immediately restored. It is to be observed, that friction during the paroxysm increased the fever and anxiety, but, after it was over, contributed much to resolve the remains of the swelling.

THE CAUSES AND SYMPTOMS.

137. The causes and symptoms of the quotidian intermitting fever do not differ from those already enumerated when we treated of intermittents in general. But in particular in this species the cold is not so great, according to Lommius ; or it begins without rigor, or only with slight shivering ; the heat diffuses itself more slowly and unequally, and appears milder and accompanied with greater moisture, although it shews some acrimony. The febrile motion generally proceeds slowly ; it is frequently protracted for eight hours and upwards before going off. But this is by no means an uniform occurrence ; for there are instances of quotidians consisting of very short courses. Boys of a phlegmatic, torpid habit, with vitiated fluids, and women, are said to be more liable to it than others, especially during the spring or winter season, or during a very wet summer. Nor is it an uncommon thing for a quotidian to be derived from other kinds of intermittents by succession and a particular change of the period. Sweat, when it is of the *genuine* and *exquisite* kind, breaks out, though not in great abundance, as the fever remits ; but none, or scarcely any, if it be of the *spurious* or *bastard* kind. In like manner, in the former the urine,

after the remission, passes off sparingly, and turbid, with a lateritious sediment; while, in the latter, it is copious, white, thin, and does not deposit a sediment.

138. To the spurious quotidians in particular seem to belong the *secondary* and *symptomatic* ones, which practitioners most frequently fall in with. Of these there are two kinds, the one affecting the whole system, the other arising from a partial injury. The diseases affecting the whole body in particular are hypochondriasis, hysterics, scurvy, or some similar affection, as cachexy, vitiated fluids, lues venerea, gout. Those depending upon the vitiation of a particular part, and referable to this head, consist chiefly of certain obscure and latent affections of the lungs and abdominal viscera, from which such fevers arise, and by which they are kept up.

139. A quotidian arising from a hypochondriacal or hysterical affection very frequently occurs. It is generally preceded by violent passions, especially grief and melancholy, and loathing, dyspepsy, obstructions of the viscera at the bottom of the belly, costiveness, excessive discharges from piles, the uterus or bowels, spasmodic and convulsive, and sometimes epileptic affections; but very frequently suppression of the menses, or a

Symptoms of the hysterical and hypochondriacal quotidian.

difficult and sparing discharge of them. At the beginning of the accession the feet are cold ; the head is warm and pained ; there is frequent yawning, and a necessity to make water ; the urine is passed thin and limpid, often in great abundance ; the heart palpitates ; the pulse is unequal and more frequent than usual ; there is sometimes a troublesome dry cough ; the respiration is rendered in some measure laborious, and the sensation of a ball in the throat is felt ; the region of the stomach is tense, swelled, and oppressed, as it were, with an unusual weight. A few hours afterwards all these symptoms remit of their violence, and the fever is gradually removed without any sensible evacuation. It is accompanied with watching, loss of appetite, bad taste, thirst and universal languor. Virgins, especially nuns, hysterical girls, and such as are disgusted with the kind of life to which they are devoted, are chiefly seized with this fever. It has been frequently observed to succeed to violent convulsions and blood-letting by my old friend Dallarminus *, a man of eminent skill in medicine.

* See *Saggi di Medicina Pratica*, P. 2. p. 108. published by myself, with additions, 1768.

140. Similar symptoms occur in the quotidian proceeding from a scorbutic affection ; together with

which spots, livid marks and extravasations disfigure the body. The limbs, particularly the legs, are affected with shooting and pungent pains. The breath is fetid. The gums are soft, swelled and black, or very red, and bleed. The teeth are loose, often become carious and fall out. The urine is red and quickly becomes turbid, depositing a red sediment, or transparent filaments, and exhibiting a variegated surface, covered, as it were, with an oily kind of scum, or crystals of salt. In this fever also there is greater weakness and numbness of the legs, palpitation, inequality and debility of the pulse, and every motion of the body occasions panting.

141. If it proceeds from a bad habit of body, or vitiated fluids, or syphilis, or a goutty taint, or any other general dyscrasy, the external appearance, the color of the skin, edematous swellings, rheumatic affections, pains of the joints, affecting sometimes one part, sometimes another, fluxions, as they are called, and catarrhal runnings, obstructions and indurations of the conglobate glands; or, when the venereal poison occasions the complaint, gonorrhoea, ulcers on the penis, preceding buboes, pains of the joints, particularly severe at night, scaly pustules breaking out chiefly on the face and head, chalky concretions, strumous tumors, exostoses, and other

In what manner
other secondary
quotidians are
known.

typhiletic symptoms, point out the diagnosis to an attentive observer.

142. It is somewhat more difficult to distinguish that kind of quotidian which is kept up by latent vitiations of the lungs, as tubercles, whether incipient or scrofulous, or any other phthysical diathesis. A slight dry cough, and somewhat difficult respiration, are considered as symptoms peculiar to this kind of fever. But these are also present in the hysterical and hypochondriacal kind, (139.). If, however, symptoms of a hysterical, hypochondriacal, or any other spasmodic affection, are absent; if the body be small or slender; while the neck is long, the chest flat and narrow; if there be any reason to apprehend a hereditary taint; if preceding diseases have proved injurious, particularly to the breast; if a slight cough and difficulty of breathing after the fever do not leave the patient, or if they are excited and aggravated by any unusually quick motion of the body; if lying on one or other side excites the cough more, or injures the respiration; if expectoration of a thick, salt or sweet kind, or streaked with blood, sometimes comes off; lastly, if the fever goes through its course after the manner of the *erratic* or *vague* kind, and the body is emaciated; if, I say, all or any of these symptoms concur, we may in that case fairly infer, that there is some secret vitiation

Marks of the pulmonary quotidian.

of the lungs, on which the *symptomatic quotidian* depends*.

* To this species belongs the *pectoral intermittent*, described by Störck, (Ann. med. 2. p. 167. new edit. Amstelod.). In it the lungs were oppressed with a viscid and glutinous mucus, which constituted the primary disease, while the fever was only symptomatic. It is therefore not to be wondered that the bark proved inefficacious.

143. The abdominal viscera, when they give rise to a quotidian, are generally affected with infarctions and obstructions of long continuance.

Symptoms of the secondary quotidian from the lower viscera. The liver, pancreas, spleen, and mesentery are more frequently liable to such faulty conditions. They are discoverable either by examination with the hand, or by derangement of the functions. If, therefore, we can feel any swelling, or hardness, or the seat of the pain, or inflation, it readily appears that the disease is situate in such a part. But if nothing of that kind can be perceived, or it appears doubtful, we must examine whether the digestion, chylication, secretion of bile, the stools, color of the urine and rumbling of the bowels, evince any disorder referable to the obstruction of those viscera. Likewise the wan, yellowish or greenish color of the face, the universal swelling of the belly, the scantiness of the urine, a preceding bad kind of food, the drink-

ing of water from ponds, the excessive use of rich food, the climate and air the patient breathes, will throw no small light on the complaint.

THE PROGNOSIS.

144. EVERY quotidian inclines to be of long continuance; but especially the symptomatic and secondary kind.

The prognosis of the different species.

Hence it readily passes into the slow continued or hectic fever, unless when it is pure and primary, we endeavour to arrest its progress. The hysterical, hypochondriacal, or spasmodic kind, (139.), is somewhat obstinate and apt to resist the power of medicines, and, on its being checked, is more liable to return, particularly on great changes of the weather. The *scorbutic* species, although both obstinate and of long continuance, is accompanied with less danger, provided the depravation of the blood has not acquired the nature of confirmed scurvy. But this also, like that arising from vitiations of the abdominal viscera, (143.), not unfrequently terminates in dropsy, or other more deadly complaints, namely, acute or inflammatory fevers, suppurations or abscesses.

But, such as are called *pulmonic*, (142.), *syphilitic*, *rheumatic*, *arthritic*, and that depending on a bad state of the fluids, (138. 141.), more generally pass into phthisis or consumption.

THE CURE.

145. WHEN the fever is primary and simple, it ought to be treated as has already been prescribed in the general cure of intermitting fevers. But the employment of gentle purgatives and neutral salts is more necessary in this fever, and they are more easily borne, because, for the most part, the pituitous sordes of the *primæ viæ*, if it does not occasion the fever, at any rate cherishes and keeps it up. Frequently by means of these alone it is entirely removed, or rendered so mild as to yield immediately to the Peruvian bark. The *malignant* and *pernicious* or *corruptive* kind, immediately, after blood-letting or purging, if they are indicated, are to be checked by the proper remedy. The *spurious* quotidian, although primary, still more requires purging, but *per epicroasin*, and sometimes, on account of being conjoined with depravation of the lymph, or being derived from thence, remedies against catarrh and

fudorifics are necessary. In the case of secondary and symptomatic quotidians, we must attend to the primary complaint. That which is occasioned by congestions of the lungs, catarrh, running at the nose, (142.), is not relieved by the bark, nay, it is even aggravated by it. But in this species it is manifestly serviceable to draw blood sparingly, but at different times and at certain intervals ; by pectorals of the oily, mucilaginous, and demulcent kind, to alleviate the cough ; and to resolve lymphatic congestions and concretions by whey, decoctions of gently aperient and attenuating pectoral herbs, Venice soap, and pulvcrised flaters, beat up with juice of fumitory or ground ivy. Sometimes, weak soups made of frogs and freshwater crabs, to which several spoonfuls of watercresses have been added ; at other times diluted milk and decoctions of the root of the bark-tree, or mountain reed, seem to have been more serviceable.

146. Since the cause of the hysterical or hypochondriacal quotidian is so various, the plan of cure must vary accordingly. When it arises from too great mobility of the nervous system, and from a disposition to spasms, and the febrile cause is neither of great magnitude, nor very conspicuous, the mind being rather affected than the body, it is then generally named *spasmodic, con-*

Cure of the hysterical and hypochondriacal quotidian.

vulſive, or nervous, and ought to be treated with tranquillity, hilarity, remedies againſt hſterics, and ſtimulants, as caſtor oil, camphor, muſk, amber, galbanum, and principally opium given before the acceſſions. Even from the very beginning Selle * recommends the Peruvian bark united with cordials and chalybeates. But this remedy proves of ſcarcely any ſervice in fevers of this kind, which in general do not yield to the bark; and, if ever cordials and chalybeates ought to be given, it is only when a bad habit of body, chloroſis, or weakneſs of the bowels, is conjoined with it, or when the complaint has weakened the whole body by its long continuance. During the apyrexia the patient ought to be made to remain out of bed, and to walk about as much as poſſible. For thus, according to Dallarminus, we reſtore the ſtrength, while we weaken the force of the fever. But if exceſſive evacuations have given riſe to the complaint, we muſt in that caſe oppoſe the conſequent debility and acrimony of the fluids by analeptics, corroborants, and eaſily digeſtible food. On the other hand, when the uſual evacuations are deficient, or diminiſhed, or the viſcera ſeem to be obſtructed, the former muſt be recalled with all due care, and the latter reſolved by aperients, ſaponaceous, gummy and tonic remedies. Purgatives in ſuch a caſe, unleſs of the very mildeſt kind, are uſually extremely

hurtful. In an obstinate case, change of air, riding in carriages and jaunting, and whatever affords delight to the mind, are preferable to all other kinds of artificial aids, and gradually remove the fever.

* Rudim. Pyritolog. Method. in my edition, p. 315.

147. In the scorbutic kind, the recent or concrete juices of herbs, succory, brook lime, forrel, water-creffes, scurvy-grass, horse-radish, trefoil, and the like, accommodated to the patient's temperament, acidulated drinks, ripe fruits, vegetable diet, travelling, the hot bath, whey, and milk itself, prove wonderfully serviceable. The juices of the anti-scorbutic plants, beat up with the bark, are recommended as being highly serviceable in the case of fevers of long standing, and those which are apt to return; because, perhaps, having arisen from a scorbutic taint, or being combined with it, they resist the bark simply, unless its power be augmented by the addition of antiscorbutic remedies. The *rheumatic* and *arthritic* kind, and that depending on bad-conditioned fluids, as well as the *venereal* or *sypbilitic* species, are removed by those remedies which are calculated to remove the primary complaints. Lastly, respecting the quotidian occasioned by abdominal obstructions, (138. 143.), and not succeeded by them, and which

The remedies adapted to the scorbutic and other species of quotidians.

The quotidian
from abdominal
obstructions.

is on that account to be referred to the symptomatic quotidians; in it the obstructions ought first to be removed by neutral salts, rheubarb, bitter extracts, and aperient decoctions; we must next have recourse to Peruvian bark and iron. There is seldom occasion for bleeding. Sometimes, however, if the fever appears to be violent, and gives reason to apprehend the presence of inflammation, and nothing contra-indicates it, blood may be let both from the arm and hemorrhoidal veins. But, if it is positively forbidden by the circumstances of the patient indicating the greatest degree of danger, in that case; according to Sydenham, antiphlogistic remedies and injections are excellently calculated to allay the raging violence of the fever. When obstructions, however, supervene upon the fever, as symptoms of it, the bowels must not be unnecessarily raked with either cathartics or aperients, but it becomes proper immediately to have recourse to the bark. For by means of it not only the fever, but its effects, immediately disappear; which I have witnessed innumerable times. I have very often restored to their natural size and situation very large spleens, which during the fits had become enormously swelled, but were not much reduced on the fit going off, merely by continuing the use of the bark, by which the fever had been stopped.

THE
TERTIAN INTERMITTENT.

148. **I**N this species of fever the accession comes and goes every third day, in such a way that between each an entire day free from fever intervenes. Hence it has the name of *simple intermitting tertian*. But if the accessions occur daily, and are daily succeeded by apyrexia, but in such a way that they are found to be similar, both in the hour of invasion and in the degree of the paroxysm, and exactly correspond; it is then considered not as a *simple*, but *double intermitting tertian*. But this double tertian, although it observes the quotidian type or order, differs, however, from the quotidian, in which indeed the accessions occur daily,

Simple & double
tertian.

but do not, as in the other, correspond with one another every second day.

149. Sometimes upon the day when the accession of a simple tertian should come on, in place of one, two occur, the middle of the day, remaining free from fever. In order to distinguish it from the *double tertian* mentioned above, Sauvages * has named it the *doubled tertian* [*Tertiana duplicata*]. But it is called a *triple tertian*, when every second day two accessions take place, as in the *tertiana duplicata*; but on the intermediate day one, as in the *simple tertian*. Such a fever has been described by Schenck, and Brendelius, who are quoted by Sauvages.

* Nosol. Method. cl. 2. O. 3. G. x. sp. xv.

150. The distinction of tertian fever best deserving notice is that into the *genuine* and *exquisite*, or *pure*, as it is named by others, or into the *bastard*, *spurious*, or *extended*, called also by Juncker *subcontinua*. The *genuine tertian*, then, is that which goes through each accession in six or eight hours, or at least is not extended beyond twelve, and is not attended with any bad symptoms. It more generally attacks in the spring and summer season, and betrays itself by the following symptoms.

Genuine and spurious kind.

THE GENUINE TERTIAN.

151. IMMEDIATELY from the beginning, and during the course of the complaint, every second day, sometimes at night, Symptoms of the genuine tertian. sometimes during the day time, it comes on with rigor, or cold of short duration, which affects the whole body with a sense of pricking. The rigor is sometimes so great, that the patients not only tremble, but also their teeth chatter ; and in all their limbs, but particularly along the whole extent of their back and spine, a violent pain is felt. Frequently during the cold stage a sense of constriction and anxiety stretches from the back to the pit of the stomach, and prevents the patient from breathing freely. Sometimes, instead of actual cold, a sense of chilliness is felt ; which happens chiefly in the case of a mild disease. Towards the end of the cold stage nausea is generally excited, or vomiting of bile ; or the belly becomes loose, the bile being probably expressed in unusual abundance into the duodenum by means of the febrile spasm. Next the heat begins to spread over the whole body, but principally over the external parts, and gradually increases, and becomes so sharp, that the patient, on account of the burning heat with which he is

distressed, throws off the cloaths, and tosses his limbs about at random. Hence follows quickened respiration, great thirst, head-ach, watching, and sometimes incoherent speech and slight delirium. At the coming on of the paroxysm, the pulse is small, contracted, obscure, and often unfrequent; shortly after it becomes great, strong, raised, and frequent; not unequal, however, or at least very little so. A few hours after the whole skin is relaxed; the pulse becomes milder, and, the sweat breaking out, the fever with its symptoms first remits, and at length disappears entirely; which happens within the space of eight or twelve hours. The patient then gets well, but only remains somewhat weak.

152. During the cold stage, the urine is passed thin, colourless, and watery; in the second and third, or at the height and remission of the fever, it is yellowish, or red, very scanty, and bad-smelling; but not so yellow as in the other kinds of tertian. Nor is the tongue made so foul with bilious matter, nor the stomach so much deranged. But it is a circumstance almost peculiar to this fever, that, after the first accession, at each subsequent accession the fever gradually becomes shorter and milder; that, for the most part, it attacks the young, of the sanguineous or bilious temperament, and otherwise in perfect health,

Of what kind the urine is, and that which is peculiar to it.

and having no other taint of the blood or viscera ; that it is aggravated rather in the morning than evening ; and that it renders the night preceding the attack sleepless and restless. A fact which was known to the author of the sixth book of the *Epidemics*, who has observed : “ In the fevers approaching pretty nearly to the nature of a tertian, the night before the attack is restless.” Hence, persons labouring under the *double tertian* generally pass the night without sleep, if they have accessions before mid-day : but if after noon, when the better part of the night is free from the attack of the fever, they enjoy sounder rest, and are refreshed with undisturbed sleep.

THE PROGNOSIS.

153. Hippocrates * observes : “ An exquisite tertian arrives at its crisis after seven courses.” Likewise the author of the *Coacæ prænotiones* † says : “ An exquisite tertian terminates on fifth, seventh, or at most on the ninth accession.” Sydenham agrees with the prognostics of Hippocrates, as he observes, that not only is this fever spontaneously resolved in fourteen days, but he even pronounces it to be salutary ‡. The same had formerly been observed by Lommius ||, and latterly by Senac, who has observed in his works, “ That sometimes by means of them obstructions are removed, the

extreme vessels, which had been threatened with obstruction, are liberated, that the different parts of the body, but particularly the vital functions, are strengthened; that the noxious fluids are eliminated by the pores; while the remaining fluids acquire a new crisis, or, that the habit of body is entirely changed §." Galen ** used to predict a solution of the disease from the urine; if it was passed only red or yellowish with a sediment, he looked for it after the fourth paroxysm; if only red, after the seventh; and, if on the first day it deposited a smooth, equal sediment, he expected it after the third day. But these marks are completely uncertain; nor does the urine afford any mark that the solution will occur, unless when it is passed in great abundance, and returns to its natural state. A more frequent proof of the approaching crisis is afforded by the pustules or cracks appearing about the lips. Sometimes, in the rage of the fever, spots break out on the skin, resembling measles or the chicken-pox, or like flea-bites; but these ought by no means to excite alarm, for, while the sweat continues to flow, and as the febrile motion remits, they disappear; nor do they portend any bad consequence in the genuine tertian, which we certainly hold to be free from other marks, the presence of which may render them suspicious.

* Aph. 59. sect. iv.

† N. 148.

‡ Oper. p. 89.

|| Med. Observ. l. i. p. 118.

§ De recond. febr. interm. et l. i. c. 20. p. 126. 127.

** Senac. l. c. l. i. cap. 10. p. 64. and 65.

THE CURE OF THE EXQUISITE TERTIAN.

154. It is generally cured merely by rest, watery, acidulous, resolving drink, and spare diet. Nature, by its own powers and efforts, performs the rest of the cure. Those efforts are promoted by blood-letting in full habits; in others, if the *primæ viæ* are loaded with fordes, or collections of bilious matter, by gentle purging. Sometimes both are necessary. It rarely requires the Peruvian bark, and only when the disease proves obstinate, or is changed from the simple to the double kind. Sauvages orders a drachm of it to be taken day and night every four hours, during the intermission, until the fits no longer return; next for seven days twice a day, and lastly once a day for seven days more. But, as has already been remarked, this method of exhibiting the bark is inconvenient and irksome. It is more proper to give two drachms morning and evening, on the day of the intermission, until an ounce and a half, or two ounces, have been taken, and the fever removed; next another ounce,

divided into eight parts, to prevent the return of the disease.

THE BASTARD TERTIAN.

155. Having discussed the exquisite tertian, we shall now proceed to treat of the
Symptoms of the
 bastard tertian. spurious kind. This, like the former, has accessions every second day, though of longer duration ; but, according to most writers, it is attended with a slighter degree of heat. Juncker *, on the other hand, affirms that the heat is greater and more durable in this than in the *exquisite* species. This, however, may rather occur in that kind which approaches to the nature of the ardent fever, as is probably sometimes the case. In the spurious kind also the sweat breaks out sooner, but is less copious, and does not afford relief ; sometimes there is none. Likewise the accessions observe no certain order, coming on sometimes sooner, sometimes later ; nor is there very great rigor ; but it is of longer continuance ; and it does not affect the whole body equally. Each course is extended to eight or ten hours, or even exceeds that. The disease is never finished by the seventh accession, seldom by the fourteenth, but more frequently by the twenty-first. It comes on generally about the

evening; it is aggravated towards night, and often deprives the patient of sleep.

* Confp. Med. Theor. Pract. Tab. 8o. n. 2.

156. Not only is the tongue covered with a yellow mucus, but also the whole face becomes yellow, as in jaundice. When the hot stage has commenced, the pulse becomes quick, but not great, as in the exquisite kind. The urine appears rather saffron-coloured, and deposits a late-ritious sediment. Moreover, loathing of food, a bitter taste of the mouth, and pain of the stomach, or gastrodynia, nay, cardialgia, often torment the patient. Juncker adds, that a cough is also present, and after the accession the patient complains of languor, weakness of the joints, swimming of the head, thirst, heat, weakness of the stomach, long watching, and disturbed sleep. When such symptoms as these occur, we have good reason to apprehend that the fever is of the pernicious kind. Sauvages has likewise mentioned other symptoms as peculiar to this fever, namely, dryness of the tongue, head-ach, and the type's being very apt to change. For he asserts, that frequently, after going through four or five courses, it is converted into a continued remittent, that is, it becomes of the kind called *tri-tæophya*; and that this change is indicated to be

about to take place by a very short intermission, want of sweating during the remissions, and by no kind of alleviation by which the patient is suffered to remain at rest.

THE PROGNOSIS.

157. It is very seldom changed, however, into the continued fever, so long as it preserves the order of the simple kind; but very frequently when it has become *double*. It may likewise sometimes become *pernicious*, with regard to the symptoms which accompany it, namely, heart-burn, dysenteric looseness, delirium, and other symptoms, which sometimes supervene upon it: but it then assumes the nature not only of the *spurious*, but also of the *malignant* kind, and of that called *perniciosa comitata*. Commonly the *bastard tertian* is of the corruptive kind, and is therefore very long protracted, and frequently, on its being overcome, it returns. Hence very often, after it has proved long vexatious, and the tone of the viscera has been weakened by it, the liver, spleen, pancreas and mesentery, are obstructed, become swollen and indurated, in such a way that cachexy, dropsy, and slow fever, ensue. Such obstructions, however, are not always to be considered as effects of dura-

Prognostic marks
in the bastard
tertian.

tion of the disease. For they sometimes precede and accompany the fever ; and, in that case, the yellow colour of the face and whole body, which we have already mentioned as occurring in the disease, may probably be derived from them ; although, in general, it seems to arise * from spasms of the abdominal viscera, and particularly of the duodenum, obstructing the mouth of the ductus choledochus, and occasioning a regurgitation of bile to the liver and veins ; unless it be considered rather as referable to the pituitous and viscid colluvies, not only of the stomach, but duodenum, obstructing the orifice of the ductus choledochus ; or to the bile itself being excessive, and in a state of lentor, and being collected in the bile-ducts affording resistance and sticking there. For in the same manner as in the *genuine* tertian, it is probable that some warm and bilious acrimony prevails, as appears from the quickened motion and greater heat, so likewise is it probable, that in the *spurious* kind, rather the phlegm, viscid humours, and sluggishness of the bile, predominate.

* When the yellow colour from the same cause is merely symptomatic of the fever, it appears at each accession, or becomes more manifest during it ; and, on the other hand, disappears during the intermission, or at least is very much diminished ; and thus comes and goes with the fever itself.

CURE OF THE SPURIOUS TERTIAN.

158. If, therefore, it appears from the preceding circumstances, that the viscera are obstructed, if the patient's temperament, habit of body, manner of living, and the kind of food he uses, seem calculated to collect crudities, to accumulate the sluggish fluids, and to condense and collect the bile; our first care should be to remove the fordes of the *primæ viæ*, by reducing the fulness of the vessels by means of bleeding, or by mitigating the symptoms requiring it in the same way: the pituitous and viscid fluids, and the crude bile, should be attenuated, resolved, and expelled; and the obstructed viscera should be relieved. This then should be effected either by means of an emetic, if the patient's age, temperament, its being the summer or autumnal season, permit it; or by means of an emetic repeated more than once, which is always safer; and by the timely and prudent use of saponaceous, inciding, and bitter remedies, and especially neutral salts, as has already been prescribed. If the fever, after the due employment of these remedies, neither goes off, nor is mitigated, we must quickly have recourse to the Peruvian bark, that it may be removed as soon as possible. Nor is it proper to wait until the obstructions are completely re-

moved ; for such as remain will afterwards be more conveniently and safely removed by aperients and bitters, in the use of which we must persevere a long time ; while such as may supervene upon the disease, when it has been of long standing, will be thus best prevented.

159. But when it appears, from weighing all the circumstances well, that the yellow colour of the face, body or urine, arises from the bile being forced to flow back, or from the cause of the fever attacking the liver *, rather than from lentor of the bile and thick obstructing fluids, the fever must immediately be vigorously repulsed by the bark ; by the employment of which, not only the fever but the icteric symptom attending it, are removed. But if it bears any resemblance to the *perniciosa comitata*, or *subcontinua*, from any severe symptom, or its long continuance, we must even at the beginning, without any delay, have recourse to the bark ; than which nothing more powerfully or innocently corrects or expels the morbid matter of the fever. But this fever frequently returns, especially in the autumnal season. Then gentle, inciding, bitter purges must be given and repeated ; and, lastly, if it does not go off, the bark must be long and plentifully employed ; provided the kind of food which is enjoined the patient does not render it ineffectual, or weaker.

* It is customary among the generality of physicians on seeing persons labouring under intermitting fever seized with jaundice, to prevent them from using the bark, and to treat them entirely with purgatives and aperients. In the mean time the fever daily becomes worse, and not only does its symptom, the jaundice, establish itself more firmly, so as from being periodical, as at first, to become constant, but also the liver is obstructed, and swells, and the evils which perhaps were not present before, at length actually come on. All of which bad consequences might have been avoided, without the smallest trouble or harm, by giving the bark in proper time; the good effects of which I have experienced a thousand times. I know, however, that men of the first learning and experience have affirmed, that frequently in fevers of this kind, especially autumnal ones, this jaundiced colour is a proof of slight and obscure hepatitis, occasioned by the sluggish, thick, and inert blood, obstructing the *vena portarum*; and that then the bark increases the malady and induces death. In my opinion, however, it is a moot point, whether or not that kind of hepatitis, whether slight or otherwise, be primary or symptomatic. If it appears primary, without doubt, the Peruvian bark proves detrimental, as being incapable of removing the fever at all, which in that case is a symptom of inflammation of the liver; but increases the inflammation itself. In that case, however, the fever is usually rather of the continued kind, nor does it preserve the true type and order of a tertian. But if the fever be a primary disease, while the hepatitis is only a symptom, the fever must be removed by the Peruvian bark, and the hepatitis likewise will be removed. But the more certainly to ensure the good effect of the bark, blood must be let repeatedly, as ought to be done in the *pleuritic tertian*, concerning which we shall, with more propriety, speak hereafter. For the inflammatory diathesis, unless it is diminished by the antiphlogistic regimen, and particularly bleeding, renders the antifebrile powers of the bark inert.

THE CHOLERIC TERTIAN.

160. Most of the fevers denominated by Torti *perniciosa comitata*, observe the type of the tertian fever. I shall, therefore, proceed to treat of them, in order to establish their proper diagnosis and cure, beginning with the *Choleric Tertian*. This fever, as the accession is about to commence, (in which as I have before observed, a vomiting of bile, sometimes a copious one and similar to loose stools, is excited), is attended with a violent and simultaneous discharge upwards and downwards of fluids, vitiated both in quality and quantity, which are sometimes *unmixed*, sometimes *diversified*, and abounding with *greenish* or *rust-coloured* bile. To these copious and frequent vomitings, and purgings, is sometimes added hiccup, hoarse voice, sometimes attended with a kind of clangor, sunk eyes, pain of the stomach, and slight sweating about the forehead, a small pulse, and coldness of the extremities, or a livid colour, in fact, all the symptoms of cholera morbus, from which, however, they should be distinguished, because they are the effects of a particularly severe fever; but as it remits, they gradually cease, nor do they return unless with a new accession.

* Tort. Therap. Special. l. 3. c. 1.

THE CURE.

161. These symptoms, whensoever they appear, although they neither occur all together, nor are always so intense as we have mentioned, yet become more severe in the following paroxysm, and threaten inevitable death, if not during that, on the next succeeding, the intermediate apyrexia availing nothing. Wherefore, whenever such a choleric affection betrays itself, it becomes not only necessary to check it by means of cardiacs, alexipharmics, and paregorics, but, when the fit is over, to employ the bark in the most powerful way, (126.), to prevent the next accession, which may otherwise prove fatal, or at least to break its force, that there may be leisure to completely hinder the following. But it is better in such a case to give the bark in wine, or made up in the form of a bolus with some agreeable syrup; for thus the remedy is kept better on the stomach, and thus we better attain our end. Which much more certainly happens, if some theriac be added to the bark, or some of the *Diascordium Fracastorii*, to allay any propensity to vomiting that may still remain.

Cure of the choleric tertian.

THE DYSENTERIC TERTIAN.

162. Very similar to the choleric tertian is that affection which may be called *semi-dysenteric*; in which, at every accession, the fluids, particularly the bilious ones, and likewise others, are excreted, both so acrid and corroding, that after them the mucus passes off bloody both upwards and downwards, with tenesmus and gripes, and pain of the stomach, as if its coats were torn asunder, and corroded; and, in fact, the *oesophagus* seems to be corroded by the passing of the excreted fluid and the effort of vomiting. But this bloody and painful excretion is attended with less danger than the choleric one just now described *. For though the fever is attended with more violence, and hiccup, and restlessness, and the saffron colour of the urine, and the dryness and roughness of the tongue; it is not accompanied, however, with that deadly coldness of the extremities, anxiety, and slight sweating, of which we made mention in the description of the choleric kind; and the pulse is fuller in this than the other: But as it readily passes from being simple to double, and from being double to the continued form, or induces a certain degree of inflammation likewise, it is accompanied with a small degree of danger, and requires precisely the same treatment,

Wherein it differs
from the choleric one.

(161.). Galeatius † mentions two cases in which the common bark was advantageously combined with the species called cascarilla. Without this addition it seemed to make the fever milder indeed, but did not stop the dysentery. Hence, he inclines to think, that the bark of itself sometimes is not sufficient to remove the pernicious fevers completely. But it is proper to observe, that the fever of which he speaks was the continued remittent, and perhaps of the kind called *proportio-pata*, so that it does not appear extraordinary that the disease did not completely yield to the bark, unless much later than happens usually in the true and simple intermittents.

* Tort. l. c.

† Comm. Acad. Bonon. T. v. P. 2. p. 221. and 222.

THE TERTIANA SUBCRUENTA, OR ATRABILARIS,

163. Another pernicious symptom, constituting a species of the *tertiana comitata*, is a kind of discharge by the belly, very like to water in which flesh has been washed, such as the ancients named *hepatic flux*. Hence, it is called *febris subcruenta*. But, sometimes, either at the commencement or departure of the accession, there is a gentle and frequent purging, and such a quantity of serous and slightly bloody matter, is passed, that, within a few hours, and almost without

any sensible inconvenience to the patient, and when he is expecting nothing of the kind, he is reduced to the last degree of weakness. Then the pulse becomes small and weak; the extremities remarkably cold; the voice becomes feeble, and the eyes sunk. In the mean time there is scarcely any thirst, and no mental derangement; nor does the patient complain of any thing but extreme debility, and a tendency to faint, with which he is apt to be attacked on endeavouring to get out of bed. As the fever goes off, the tumult is gradually allayed, and is seldom prolonged to the day of intermission. But if it be prolonged, the patient will fare ill on the following day when the next accession takes place. Therefore, when such a deleterious looseness recurs with the accessions, and acquires strength with the increase of the fever, in a short time, that is to say, within two or three courses from the coming on of the symptom, the patient most assuredly will be carried off. Sometimes, however, in corpulent patients it is not found to be equally fatal; but, on the first attack of the disease, being in some measure overcome, it is rather apt to become tedious. But, if instead of the serous and slightly bloody flux, dark-coloured, black blood, sometimes coagulated, sometimes thin, sometimes mixed, be passed copiously to the extent of a few pounds; then the fever may

be called *atrabilaris*; and more certainly and quickly, under the appearance of a tranquil faint, terminates in death *. But each species, on employing the bark, is cured in the happiest and most miraculous manner.

* Tort. l. c. ib.

THE TERTIANA CARDIACA †.

164. That kind of tertian receives the name of *cardiaca*, or rather *cardialgica*, which is attended with *cardialgia*. For at the beginning of the accession, while the rigor and shivering still continue, or when they are beginning to be succeeded by the hot stage, there arises a most severe corroding pain about the mouth of the stomach, together in general with slight vomiting, or a fruitless desire to vomit. If to this be conjoined frequent fainting, weak pulse, the facies Hippocratica, and mournful sighing, and that pain, or gnawing sensation, becomes so vehement, that instead of the usual expiration the patient sends forth groans and howling, (for it is that which distinguishes true *cardialgia* from simple *gastrodynia*); there is imminent danger, and the more certainly and soon will it occur, according as these symptoms are prolonged, or not. But in whatever accession, whether the second or third, (for it sel-

dom happens in the first accession), these symptoms arise, there is reason to apprehend, that one or two courses more may prove fatal †. For such a symptom scarcely arrives at the fifth accession without occasioning death. It is proper, however, to remark, that when the symptoms already enumerated concur, they constitute the genuine *tertiana cardiaca*; and that when they are fewer in number and lighter, they cause the *spurious* one.

* Probably to this species should be referred the fever described by Morton, (*Exercitat. de proteiform. febr. intermit. gen. cap. ix. histor. 13.*), although he names it from the spasm of the diaphragm and parts subservient to respiration.

† *Id. ib.*

165. It seems proper to class under this head the *emetic tertian* of Sauvages, in which about the commencement of the attack there occurs copious vomiting of yellow and green bile, or mucous phlegm, accompanied with no small degree of cardialgia, heat, and most intense thirst continuing to distress the patient very severely for several hours. In the *cardiaca*, as well as this species, it is proper to avoid every thing that excites vomiting or purging, except diluent drinks, and very bland injections. The cure should be attempted by the bark alone, omitting other inert remedies, which, it appears,

The cure.

physicians have employed to no purpose. If the pulse is strong and full, if there is reason to apprehend the presence of inflammation, particularly of the stomach, blood-letting is sometimes admissible at the increase of the febrile paroxysm. For, in such fevers, I have not unfrequently observed the stomach inflamed, and the disease resemble the *Lipyrria*; in which case, before the use of the bark, blood must be once or twice drawn from the arm.

THE DIAPHORETIC TERTIAN.

166. We are still more apt to be deceived by the fever called *diaphoretic tertian*, which comes on without any preceding mark of badness, like the benign tertian, with shaking, and rigor, and cold, succeeded by the usual heat. But the sweat breaks out certainly rather soon, and at first alleviates the fever, although it afterwards in fact aggravates it, and that in proportion to the quantity of the sweat. Afterwards the sweat grows cold, which especially occasions the deception. For it flows perpetually, and diffuses itself cold over the whole body; and thus the patient being perpetually cold, and sweating, is wasted and dissolved, like wax, and falls away. In the mean time, the pulse is quick, small, and weak; the breathing becomes difficult and frequent; the

whole strength is exhausted ; the mind alone remains perfectly clear, and the patient is conscious of the gradual approach of his dissolution. But if death does not come on actually during that accession, it most certainly will be occasioned by the next. Sometimes the sweating does not appear so soon, but only about the remission of the accession ; which, though it is a rare occurrence, is attended, however, with no less danger and malignity. For, after almost the entire accession is favourably terminated, and at length brought to the period preceding its declension, the patient begins to be wet with a scanty, clammy, cold sweat, and grows cold all over, like marble, and death, which is pointed out by the facies Hippocratica, succeeding in the place of the declension, cuts off the patient. But such a degree of danger may be prevented merely by the timely employment of the cinchona.

THE TERTIANA SYNCOPALIS.

167. True and simple syncope, or that which is neither the concomitant nor effect of diaphoresis, often spontaneously attaches itself to the accessions of the pernicious tertian. In that case the fever is now called *syncopalis*. One labouring under this fever, although distressed with no pain, frequently, however, without any manifest cause,

becomes very languid, relaxed and faint, while he turns himself from side to side, or only tries to move his arm or hand. Moreover the pulse is languid, small, quick, obscure, sometimes deficient ; the neck and forehead are covered with a gentle sweat ; the eyes are hollow and dim ; and the patient becomes so weak, that he perpetually stands in need of being refreshed with strong scents, and cordials, as far as possible to prevent the threatening delirium, with which, however, he is frequently seized. If, during the increase or height of the fever, these symptoms continue, although they afterwards cease entirely, and are succeeded by perfect apyrexia ; unless, however, the recurrence of the next accession be not prevented by the copious use of the bark, it will probably prove fatal.

THE TERTIANA ALGIDA.

168. Likewise a certain degree of deadly cold accompanies some tertians from the beginning to the end of the accessions. Hence such fevers are called *algidæ*. In these neither does the body grow warm again, as usual, nor does the pulse rise. In the mean time there is urgent thirst, the most distressing anxiety, while the face exhibits the cadaverous appearance. If, on the accession, when that deadly symptom first stops, the patient is

not cut off, it is with difficulty afterwards, and not till a long time that the patient begins to become slightly warm, and the pulse, which was formerly low, becomes somewhat quicker, in such a manner, however, that it is little less frequent than natural, with gentle heat, and somewhat hoarse voice, sometimes a rough tongue, either copious or limpid, or sparing or dark-coloured urine. Nearly in this state does the patient continue during the whole intermission, otherwise tolerably tranquil; but, on the new paroxysm returning, he generally sinks under the complaint. Sometimes the cold is neither greatly protracted, nor does the pulse sink so much, while a certain degree of moist heat returns. When such symptoms occur, they sometimes rather denote long continuance than deadliness of the complaint. We must, therefore, with all possible speed, make head against this fever also by means of the Peruvian bark, in the efficacious way, of which mention has already been made.

THE LETHARGIC TERTIAN.

169. Lastly, the series of bad symptoms, with which the *pernicious fevers* of Torti are attended, is terminated with a soporose affection, at one time resembling *coma*, at another lethargy, sometimes the species of insensibility called *carus*, nay,

sometimes *apoplexy*, *hemiplegia*, and similar diseases; which usually supervenes, not only upon the tertian, but all other intermittents. Hence, the fever is named by authors, *comatosa*, *lethargica*, *carotica*, *apoplectica*, *hemiplegiaca*, or simply *soporosa*, according to the difference of violence of that symptom. This pernicious symptom occurs both at the beginning and increase of the paroxysm, and increases with it proportionably, until, as it remits, the symptom also gradually disappears. But it is not removed entirely, since, even during the time of intermission, there generally remains some drowsiness; which, when it happens, shews pretty clearly that the affection is gradually taking root and becoming idiopathic. Wherefore, if it is neglected, the lethargy, like a violent apoplexy, in one or two fits becomes of a deadly nature, and not to be overcome by any skill, especially, as Werlhoff * has observed, when the patient is advanced in life.

* *Observat. de Febr. præcip. intermitt. et ex earum genere continuis*, Sect. 1. §. 3.

170. But when such a soporose affection begins, the patient at first is easily roused, but shortly after again falls into it: he soon experiences the most perfect oblivion of past transactions, and no longer remembers what he either

had spoken, or asked for just before, in the mean time sleeping, and sometimes muttering, stammering and mutilating Difference of the sleep. his words, or pronouncing one thing for another, just as if he were labouring under slight apoplexy, and his tongue becoming paralytic. At length he becomes so oppressed with lethargy, that he lies on his back, and snores, nor can he by any noise or twitching be awoke, or if he seems to be roused for a short time, he relapses into a still more profound sleep, until the paroxysm remitting thought and sensation return. But if he be excited once or twice, that is The cure. always attended with considerable difficulty, and does not happen till after some time; or if hiccup supervenes upon the lethargy, then to a certainty will the third or fourth accession prove fatal, unless it be prevented by the bark *. But during the comatose state all those remedies may be called to aid which are accommodated to lethargy or apoplexy, namely, bleeding, cupping-glasses, blisters, friction, acrid clysters, and strong scents applied to the nostrils. These remedies, however, by no means prevent the recurrence of a very bad affection when the next paroxysm comes on. To all those remedies, therefore, which are at all calculated to allay the symptom, should be added the cure by means of the bark, that the fever, the cause of that symp-

tom, may be removed. But it is proper here to remark, that old people, when attacked with this disorder, although they may have been more than once preserved by means of this admirable remedy, sometimes, however, after some interval suffer a relapse, and are suddenly carried off in a fit of apoplexy, or, though they have recourse to this remedy, are consumed by a slow, continued fever, as I have several times had an opportunity of remarking. For it is probable that the brain has received such an injury from this symptom that it afterwards from a slight cause may be affected idiopathically, without any hopes of recovery.

* Tort. l. c.

THE TERTIANA CATARRHALIS OF MORAND*.

171. Such are the principal and most usual species of the *comitatae* observed by Torti, and transmitted to us in his writings; although he does not deny that there are still others mentioned by Mercatus, and Morton. Of those Morand has selected the same number as Torti, of which he has illustrated four by his own experience, although they were seen likewise by others; but he has added three, of which he himself was the first to make mention †. The first of these is what he

calls the *Tertianā Catarrhalis*, because it is attended with a suffocating catarrh. For it sometimes happens, that, at the beginning of some accession of a tertian, the lungs appear as it were oppressed with a collection of catarrhal mucus; whether that depends in fact upon a serous and mucous fluid exhaled into the lungs, or from a spasmodic oppression of the breast. Hence the respiration gradually becomes very difficult, accompanied with a wheezing noise of the matter contained within, as it were boiling and frothing. To this is gradually added, according to the motion of the fever, fulness of the chest; restless tossing; a moist, hoarse voice; swollen face, and shining eyes; sweat breaking out about the fore-head and breast; a small pulse; and, lastly, want of strength both to cough and spit out; so that one would pronounce a suffocating catarrh to be present. But as the paroxysm remits and disappears, all those symptoms are allayed; and, on its return, they arise anew, and are aggravated, so that it may be with reason apprehended, that within four or five paroxysms from their first appearance, they may occasion inevitable death. The remedy, however, is the bark employed soon and copiously, as has been already advised, or shall hereafter be recommended when we speak of the method of using it employed by the ingenious author. But during the paroxysm we must not

neglect those remedies calculated for the cure of the suffocating catarrh, as blood-letting, bathing the feet with tepid water, rubbing the joints, inhaling the steam of warm water, pectorals, oxymel with squills, spirit of foot, gum ammoniac, dilutions of resolving herbs, &c.

* To this fever belongs the pernicious *catarrhal* and *asthmatic* tertian of Bonetus (Polyalth. T. 1. p. 250.), namely, when it is attended with catarrh or asthma, and is rendered pernicious. Galeatus also (l. c. p. 217.) records two instances of an asthmatic pernicious fever, named from the asthma, in which he employed the bark with advantage. But in these cases the fever did not intermit, but only remitted. Likewise Torti makes mention of a species of that kind of pernicious intermittent, but only on the authority of Mercatus and Georgi of Mantua, from one of whom he has borrowed a remarkable case of asthmatic fever.

† De quibusdam tertianis perniciosis commentatio, cap. 3.

THE COLIC TERTIAN.

172. Sometimes a tertian at its commencement attacks the uterus or intestines in a particular manner; and hence the violent pains of those parts with a sense sometimes of twisting, at others of very uneasy tension, sometimes of rumbling and tremor, with a small pulse, great anxiety, spasms and internal convulsions, an inclination to frequent vomiting, with sudden changes of the external

Description of the
disease.

surface of the body, sometimes with cold sweat, thirst, and excessive dryness of the tongue. These symptoms, however, do not always appear all together, but sometimes more, sometimes fewer, and, as the fever comes and goes, so likewise do they. But such pains always denote great danger, and principally, when the type of the accessions being rendered obscure, becoming constant together with the fever, they pass from being only a symptom to an essential disease, which shortly becomes fatal. Morton has frequently observed such *colic* fevers joined with excessive vomiting, fainting, and coldness of the extremities *, sometimes also with aphthæ of the mouth and

Cure.

fauces. During the time of the accessions, nothing appears more useful than injections, fomentations, the liberal use of chicken-broth, theriac, laudanum, and other antispasmodics; and if inflammation is apprehended to be present, and the pulse and strength admit it, blood-letting. After the paroxysm is removed, the rest of the cure should be intrusted entirely to the bark. Sometimes, after the fever has been got the better of in this way, ophthalmia has succeeded †, which must be treated, as usual, with phlebotomy and cathartics, and, if the fever returns, it must be again discussed by the bark, which may then be done without risk.

* De proteiform. febr. interm. genio. Hist. 16. 17. 18.

† Ibid.

THE ARTHRITIC TERTIAN.

173. The pernicious nature of the fever is likewise indicated by universal pains, its description. like rheumatism or gout, and following the course of the febrile accessions. At first these are *tense* and *oppressive*, and obstruct the free motion of the limbs; afterwards they become *vibrating*, *lancinating*, and *twitching*. To these are added *beat*, sometimes *transient*, at others *intense*, at the height of the fever *anxiety about the præcordia*, *weak pulse*, *loss of strength*, and *insatiable thirst*. These pains generally go off with the fever, and return with it periodically. But if, when the paroxysm is over, any thing of them remains, when the new paroxysm returns, they are so aggravated as readily to terminate in *universal spasm*. Besides the paroxysms sometimes are protracted longer, and incline to the continued form, their type becoming more obscure every day. In which case, there arise dangerous symptoms about the abdominal viscera; whence inflammation of the *liver*, *spleen*, or *stomach*, is threatened, or at least affections of the spleen supervene on the fever now become slow and habitual. All those bad consequences are prevented

by the timely employment of the bark, and the fever, as usual, is cut short. But even during the excruciating pains and spasms attending this species of fever, which induces an universal pain like that of spasmodic rheumatism, as Morton observes*, he does not hesitate to alluage it by blood-letting, emetics, blisters, and anodynes, especially laudanum.

* L. c. Histor. 12. and 22.

THE PLEURITIC TERTIAN.

174. Nor is that tertian less pernicious with which a pain, exactly resembling pleurisy, is conjoined. The paroxysms are generally preceded by a giddiness of the head, succeeded by the shaking, which grows worse and worse, till it excites nausea, cardialgia, and vomiting. In the mean time, a little below the breast, or about it, there supervenes an acute and pungent pain, sometimes only obtuse and oppressive, but constant, sometimes attended with a sense of burning, for the most part aggravated by inspiration, together with the other symptoms of pleurisy, as a quick, hard, and not unfrequently an unequal pulse, small, frequent, and difficult respiration, in the erect posture, a very troublesome cough, almost un-

Its description.

quenchable thirst, and considerable bitterness of the mouth. About the height of the complaint, the patients are remarkably warm, rave, expectorate different coloured matter, bloody or purulent, and pass urine of a thick, turbid kind, like that of cattle. Nor is it uncommon for the complaint to increase to such a degree as to resemble the *suffocating species of peripneumony*, accompanied with chilliness of the external parts *. When these symptoms observe the changes of actual fever, and ought therefore to be considered as febrile, they not only require the speedy use of the bark, as in the cure of other pernicious fevers, but likewise all the remedies adapted to deal pleurisy, especially repeated blood-letting, which is so necessary, that I myself have often found the bark fail of success, unless preceded by copious bleeding, i. e. unless when the inflammatory diathesis had been previously blunted in some measure by means of blood-letting. Nor in that case is any danger to be apprehended from a remedy, which otherwise in inflammations is reported to be hurtful. That it is then employed with the greatest safety and success, has been confirmed by undoubted experiments.

* Mort. l. c. Histor. 21.

THE TERTIANA CÆCA OF MORAND.

175. The three following species of tertian, namely, the *cæca*, *scorbutic*, and *petechians*, as he himself without ar-
Description.
 rogance contends *, were first noticed and treated by Morand †. And first, with respect to the *cæca*, it begins with lassitude, debility, frequent yawning and stretching; next come on the horror, rigor, and trembling, paleness of the extremities, anxiety, nausea, heavy, obtuse pain of the head, vomiting, low, quick, hard pulse, and a certain degree of giddiness, in some measure blunting the sight. As the heat and fever increase, restlessness, talkativeness, forgetfulness, dulness of the sight, thirst, deep sleep, paralysis of the tongue, delirium, blindness, a sorrowful countenance, and urine depositing a sediment, succeed. But when once the fever remits, the sight is gradually restored, objects, which at first appeared confused, are now seen clearly and distinctly, the mental faculty recovers its vigour, while there remains some propensity at one time to deep sleep, at another to talkativeness; which, when it happens, conveniently shews, that the cause has not been entirely removed from the brain, but is fixed there, and requires the timely use of the proper remedies immediately, or at

least before the fourth accession, lest we have reason to repent when it is too late. It is necessary, therefore, immediately to loosen the

Cure. belly, to bleed, and to produce revulsion by means of epispastics, to employ the bark in great abundance. I remember of a blindness of this kind, with which an ingenious young physician was affected, after the fever had been discussed by means of the bark, as it still continued, being cured entirely by persevering in the use of this remedy.

* Morand. l. c. cap. 3.

† Namely, so far back as the year 1729, when a certain species of pernicious fevers prevailed epidemically, under which many who laboured were saved by him.

THE SCORBUTIC TERTIAN OF THE SAME*.

176. This species has its name from the scurvy, symptoms of which are manifested by it; but to merit the name of *pernicious*, (for spots of a *regular figure* and *red colour*, which disappear as the accession remits, are often present in the genuine and benign tertian), it ought to betray itself by the following symptoms. The accession commences with a certain spastic sense of chilliness, which, rising from the lumbar region, gradually extends along the length of the

Description.

whole back to the pit of the stomach, and goes on with an effort to vomit, with inordinate rigors during the whole time of the accession, and aggravated at the height of the complaint; together with tightness and anxiety about the præcordia, difficult respiration, with delirium or profound sleep, with small, depressed pulse, too thick urine, irregular, broad, violet coloured spots, and which disappear somewhat on the day of intermission. When the fever follows this order of the symptoms, we must not rashly conceive hopes; for, towards the fifth accession, an hemorrhage from the nose or intestines will prove fatal, or, after the seventh paroxysm, if it does not occasion death, it will pass into some other disease, particularly consumption or dropsy. In this case also good effects may be expected

Cure.

from the cinchona †, although I know very well, that some physicians, and those of no small name, formerly were of opinion that it paved the way to scurvy, and have again and again warned succeeding practitioners to beware of employing it. But since it has been discovered that the bark is of service in scurvy also, they are scarcely any longer listened to. It raged in the winter of the year 1765. An epidemic scurvy prevailed with great violence at Faventia. All those remained free from it, who, on account of preceding very pernicious autumnal fevers, and

which were exceeding apt to return, for a long time had employed the bark very plentifully †.

* Ettmuller also makes mention of a scorbutic tertian, and has been followed by Sauvages. But the scorbutic tertian of Ettmuller differs widely from that of Morand. The former is a symptom of scurvy, for the most part it is benign, often spurious and very obstinate, of long continuance, very apt to return, and to be cured by antiscorbutics alone, seldom yielding to the bark. See Ettmul. Colleg. Practic. sect. xv. cap. 2. opes. T. 2. p. 324. et seq. While that of Morand is primary, pernicious, shortly proves fatal, is immediately stopped by the bark, and scurvy appears to be a symptom, not the cause of it. See above, 140. 147.

† If any one, however, at the same time opposes the putrid dissolution by means of antiscorbutics, particularly the mineral acids, the more favourable will be the event.

‡ Sagg. di Medic. Prat. di Pietro Paolo Dall' Armi, P. 1. p. 37. Giunta; being a history of the epidemic of the year 1795, subjoined by myself.

THE TERTIANA PETECHIZANS OF THE SAME.

177. During the paroxysms of this fever, for half an hour, sometimes a whole hour, but seldom longer, the patient is violently shook with shivering; while his back is affected with what are called *tense* pains, his strength being suddenly reduced, and frequent faintings coming on. Shortly the shivering is succeeded by heat, which is at one time

tolerable, at another excessive, but always conjoined with anxiety about the præcordia. The pulse is usually small, quick, and low; the sleep is diminished; the head is weak and slightly pained; the urine tinged with an orange colour, and exhibits a thick sediment. On the third paroxysm, or very seldom on the eight, an efflorescence of red or livid spots takes place, in great abundance, about the neck, breast, and shoulders, with remarkable distress of mind, and delirium, pointing out the height of the fever. All which symptoms become milder during the intermission; but upon the succeeding accession arise anew with greater violence, except the spots which constantly remain even during the intermission. Although this fever, according to Morand, for the most part terminates favourably *, sometimes, however, it proves fatal. On which account, we are advised by the same author to defer pronouncing our opinion on the event, until unequivocal symptoms either of a good or bad disposition appear. A favourable event may be expected in particular from the peticulæ, if they appear after the seventh accession, and from the pulse, if it be great, strong, and equal. On the other hand, an unfavourable event may be expected from their appearing about the third accession, and from a small, irregular, unequal, and weak pulse. It will be better, therefore, in my

opinion, in so doubtful an event, to have recourse to the bark †, as the safest and surest remedy which can be employed in such cases.

* For the peticulæ are sometimes benign; nor do they portend any mischief or malignity. Such were they in the petechial tertian of Marcellus Donatus. De med. hist. lib. 3. cap. 14. which is quoted by Sauvages. But such a tertian, however, was not of the pernicious nature of that called by Morand *petechizans*. But the *epidemic petechial tertian*, observed by Bartholin, in the year 1652, in Denmark, approaches more nearly to the species called *petechizans*. See Bonet. Polyath. T. 1. p. 252. To ascertain, therefore, whether the spots are a pernicious symptom, or not, we must subject the other symptoms also to examination, in order to avoid error.

† Morand (l. c. cap. 4.) proposes this method of exhibiting the bark, in every species of intermitting fever of which he has treated, as being more or less efficacious, according as the danger is more immediate or distant. Since the species called *catharrhel*, *colic*, *pleuritic*, and *cæca*, tend more rapidly to death, so do they require more decided practice; while such as are denominated *arthritic*, *scorbutic*, and *petechizans*, because more slow in their fatal progress, require more gentle treatment. If the bad symptoms, therefore, which attended all the preceding accessions, especially the last, appear so violent as to point out a speedy tendency of the disease to death; we must by all possible means immediately prevent the future paroxysm. So soon, therefore, as the present accession begins to remit, let six drachms of the bark be shortly given at a draught, then three more after an interval of three hours, repeating the same quantity after other three hours; and, lastly, the same quantity should be given after four hours more. Having thus to a certainty warded off the succeeding paroxysm, a drachm should be given daily for the space of eight days, and, after that, every second day for twenty days together. Then, having inter-

mitted the bark for five or six days, let two drachms be repeated, and, lastly, every fifth day, half a drachm for three times more. When the danger, however, is not so urgent, and we may pursue a less rigorous regimen, it is sufficient to give four drachms of bark the first time, then two four hours after, and afterwards one not only every day for six days, but likewise still every other day for twenty successive days: and, lastly, every fifth day half a drachm for twenty days.

178. To this species may probably be referred the *tertiana urticata* of Planchon *, at each paroxysm of which appeared the purple nettle-

The *tertiana urticata*, scarlatina, &c.

rash; and disappeared, as the fever terminated in sweating. Likewise it is cured by means of the bark, diluents, and mild cathartics. Perhaps that which Wedel saw, and denominated *scorbutic tertian*†, ought to be referred either to the *urticata* or *petechians*. For at each accession of it broke out spots like *petechiæ*. It was cured by soup made of vipers. There is no reason for hesitating to add the symptom resembling the *purpura scarlatina* to the class of tertians; for

Morton ‡ observed a quotidian conjoined with a similar eruption of a bad kind. Likewise the miliary eruption not unfrequently supervenes upon intermittents ||, nor are such eruptions always to be ascribed to the sweating and hot regimen. Why should they not, therefore, supervene upon tertians also? I myself have

Miliary tertian.

frequently seen in certain constitutions, without the heating regimen having been adopted, nay, when the reverse was employed, miliary pustules, those of the nettle-rash, peticulae, and other exanthematous appearances, supervene on tertians.

Sauvages and Cullen enumerate among the species of tertians the *miliary tertian* of Walthier §, but improperly; for Walthier, in that part of his works which they quote, has described the *real* miliary fever, not a tertian accompanied with a miliary eruption; nor is it any objection that that fever, at the commencement, put on the deceptious appearance of a tertian; since this frequently happens in it, and it therefore does not yield to the bark, unless when the fever is actually an inter-mittent, and the eruption only symptomatic **.

* Tour. de Medec. Tom. 17. p. 75.

† Medicina Septentrion. Boneti, T. 2. p. 552. observ. 22. towards the end.

‡ De Proteif. febr. interm. genio exercit. 1. c. 9. hist. 24.

§ Gastellier Essai sur la fièvre miliare. Introduit. p. 21.

§ Nosol. Meth. cl. 2. ord. 3. Gen. 10. sp. 21. Cull. Gen. Morb. cl. 1. Sec. 1. Gen. 1. Tertianæ efflorescentiæ cutis stipatæ. 1.

** Vid. Roncalli Europ. Medicin. p. 151. where Walthier's letter is to be found.

179. Among the *comitatae* may be ranked not.

a few other species of tertian, although not always pernicious, nor, when they are, so much so as these already spoken of, nor very frequent, of which, however, some mention is made by Nosologists. Sometimes the accessions are periodically accompanied with hysterics, or a sense of suffocation, or excessive flatus, or convulsive motions, or spasm, or epilepsy. Hence they denominate such a tertian, *hysteric* *, *hypochondriac* †, *convulsive* ‡, *spasmodic* ||, or *epileptic* §. Some even have had an opportunity of seeing the species called *lyngodes*, so named from its being attended with hiccup**, which others have preferred to call *verminosa*, as being excited by worms †† irritating the stomach, although that is a fact which has not been sufficiently established ‡‡.

But that which has been named by Deidier, *syphilitic* |||, or by Junker, *scabiosa* §§, or by Ettmuller *** and Bartholin †††, *scorbutic*, and the like, are either merely *symptomatic*, or *complicated*, and, therefore, do not belong to the *comitatæ*.

Other species may be added to the *comitatæ*.

Such as should be excluded.

* Wedel. A. N. C. Dec: 1. A. 2. obs. 193. et Medic. sept. Bonet. P. 2. lib. 7. Paraleipom. observ. 22. p. 552.

† Duncan Baine. Edin. Med. Essays, T. 5. P. 2. p. 137.

‡ Wedel. l. c. The fever recurred daily with convulsive motions and spasms. Might it not be a double tertian?

|| Beobacht. 1. Band. p. 24. Fr. Cas. Medic. T. 1. see Comm. Lips. suppl. 2. to decad. 2. p. 204. et seq.; where, however,

the author has some observations concerning a quotidian attended with spasms and convulsions, *extended*, of the kind called *subintrans* and *malignant*, unless it rather be supposed to have been a double tertian of the pernicious kind, and that called *communicating*, attended with convulsions and spasms.

§ Caldera. Trib. Med. p. 225. Lautter Hist. Med. bienn. c. 11. cas. 2.

** Rammazinius, l. c. § xi. p. 14.

†† For Rammazinius, because he had often seen worms combined with that epidemic, was easily led to suppose that the hiccup, with which the tertian was accompanied, had been excited by worms. But by what remedy was it allayed? By removing the fever by means of the bark. Had not the hiccup, therefore, been a symptom of the fever, doubtless it would not have yielded to the bark. For the anthelmintic virtue ascribed to it, is very doubtful, if not fictitious. Nor, in my opinion, is it more clearly evinced from a successful cure of this kind.

‡‡ Sauvag. l. c. sp. 18. Cullen, l. c. 4.

§§ De morb. ven. sect. 4.

¶¶ Tab. 80. Hoffman. 11. p. 12.

*** l. c.

††† l. c.

180. Each of those fevers must be treated according to the various symptoms attending them; that is, the same remedies which are employed in hysterics, hypochondriasis, convulsions, and epileptic motions, must be employed in them also, especially antispasmodics, stimulants, and antileptics, besides the general evacuations indicated

How they are to
be cured.

by plethora or indigestion. . But the Peruvian bark is necessary in them also, which either by itself, or conjoined with the remedies already mentioned, very certainly dispels them. The *symptomatic* fevers, on the other hand, are cured by the means adapted to the primary diseases, of which they are symptoms ; or, if they be *complicated*, there is occasion for a mixed cure, or one calculated both for the fever and the disease with which it is combined. Hence, the *syphilitic* and *scorbutic* species, and that called *verminosa*, are remarkably relieved by antivenereal remedies, especially preparations of mercury, and by antiscorbutic and anthelminthic medicines.

THE

QUARTAN INTERMITTENT.

181. **W**HEN the accessions occur regularly every fourth day, and leave the space of two days free from fever, the fever is

The description. then denominated a *Quartan*. It

prevails chiefly in the autumn and winter ; and goes through its courses generally in the afternoon. It begins with most intense, painful, and irksome cold, penetrating, as it were, to the very bones. After the first paroxysm, in which there is generally great rigor, so much does it and the trembling increase in the subsequent fits, that sometimes the teeth, and even such as are sufficiently firm, by being struck together, are knocked out of their sockets. The cold stage is generally protracted to two, three, or a greater number of hours, and distresses the patient

longer than in the quotidian and tertian. The succeeding heat by no means corresponds with the intensity of the cold, but is slighter than in the tertian, greater than in the quotidian, at least in general, and is prolonged for five or six hours with some head-ach and heaviness. Then it gradually remits, and the paroxysm is terminated with gentle sweat, sometimes with none at all. At the beginning of the cold stage, nay, throughout its course, the pulse is small, low, unequal, slow, and unfrequent, nor, on the approach of the hot stage, although it becomes quicker and more frequent, does it ever arrive at that degree of quickness and frequency usually to be found at the height of a tertian. There is generally neither vomiting nor looseness, as Sauvages remarks after Sydenham. But before their time Galen * thought otherwise, who has ascribed more copious excretions to the quartan than to the quotidian, especially vomiting of phlegm, thin, watery, and white urine. But sometimes a complete intermission ensues, at other times an imperfect one, according as the sweat has flowed, or been wanting.

* De differ. febr. l. 2. c. 5. de Typ. c. 5. De cris. l. 2. c. 4. ex Trinka, l. c. P. 1. c. 4. f.

VARIETIES.

182. Let these symptoms be understood of the *genuine quartan*; for in that called *spurious*, or *bastard*, all the symptoms, particularly the heat, thirst, and watching, are more distressing, the accessions continue longer, and very often by no means attain a perfect apyrexia. Moreover, it usually succeeds to other fevers, both continued and intermitting. Likewise some quartans are *simple*, as mentioned par. 181, others are *double* or *doubled*, *triple* or *tripled*. In the *double* kind the accessions return on the two first days, the third remaining free from fever, but in such a way that the accession returning on the fourth day is exactly like to that of the first, while that which recurs on the fifth, corresponds with that of the second day. If on every fourth day the fever comes on not once, but twice, and goes off, leaving two days of apyrexia, it may be called *duplicata*, or *doubled*. But the *triple* one is that in which, as in the quotidian, paroxysms occur every day, but those of the first day should correspond with those of the fourth, those of the second with those of the fifth, and those of the third with those of the sixth. Lastly, that species is called *triplicata*, or *tripled*, which attacks every fourth day only, but experiences three accessions within

the twenty-four hours. Sauvages * mentions that Feovius laboured under this kind of fever for six months, and was at length cured by means of the cinchona mixed with the fixed alkalies.

* Nosol. cl. 2. g. 11. sp. 16.

183. Moreover the quartan, as has been said of the quotidian and tertian, is liable to the varieties in common to the other kinds of fever so often already noticed. Hence it becomes necessary to distinguish it into *benign*, *pernicious*, *comitata*, *primary*, *secondary*, *symptomatic*, *complicated*, and so forth. See the *Cataleptic quartan* in Bonetus *, the *comatosa* in Piso †, the *epileptica* in Scholzius ‡, the *hysterica* in Morton §, the *nephralgica* in Lemery §, the *amens* in Sydenham **, the *splenetica* in Sennert ††, and Ettmüller ‡‡, the *artbritica* in Musgrave ||, the *syphilitica*, in Mourro §§, and Ballonius ***, and Plater †††, the *scorbutica* in Bartholin ‡‡‡, and Timeus ||||; as Sauvages and Cullen learnedly remark.

* Polyalt. vol. 1. p. 805. et Sauvag. Nosol. Meth. Cl. vi. ord. v. gen. xxiv. catalepsis, spec. 7.

† Observ. de morb. a colluv. serof. obs. 167. 168, et seq. to 174.

‡ Conf. 379. 380.

§ Pyretol. exercit. 1. c. ix. h. x. et xi.

§ Sauvag. sp. 9. who quotes Diar. erud.

** De morb. acut. cap. v.

†† De febr.

- ‡‡ Colleg. Consult. caf. 25.
- ‡‡‡ De Arthrit. symptom. c. ix. hist. 4. and 5.
- §§ Edin. Med. Essays, vol. vi. art. 47. obs. 9.
- *** Epid. l. 2. p. 131.
- ††† Observ. l. iii. p. 676.
- ††† De med. Danic. Diff. iv.
- ‡‡‡‡ Lib. viii. caf. 18.

THE PROGNOSIS.

184. The quartan far exceeds all other fevers in duration; except perhaps some species of the quotidian, especially the symptomatic and spurious kind, to which may be applied the observations which have been every where made concerning its very obstinate disposition. It for the most part begins in autumn, and, if left to itself, continues the whole winter, until, as the spring advances, it gradually ceases. The *summer* and *spurious* quartans are generally of shorter continuance; hence Hippocrates * has observed: "the summer quartans are generally of short duration; the autumnal ones of longer; and still more lingering are such as happen near the winter season." It is seldom protracted beyond a year; although obstinate quartans of several years standing have sometimes been seen. Uncommon and scarcely credible instances of their having continued, eighteen, thirty, and even forty-eight years together are to be found in the works of Wier; Wolfangus

Gabelcoverus, and other admirers of the marvellous †. But Hippocrates deserves no credit when he observes ‡, “That of all fevers the safest and mildest is the quartan;” nor must we pay such attention to that passage in Galen, where he pronounces it to be free from danger ||, as to forget another § of the same author, in which he confesses that it is a most distressing complaint, and sometimes terminates in a fatal dropsy, as is confirmed by daily experience.

* Aph. 25. sect. 2.

† See more ample information respecting this in Trnka in *Historia Febr. interm. omnis ævi. vol. 1. P. 1. cap. 9. § lxxiv. et seq.*

‡ Epid. 1. iii. 17.

|| De art. curand. ad. Glan conem. l. 1. c. 8.

§ Comment. iii. in Hip. Epid. l. 1. n. 4.

185. Nay, not only Forest *, and many others, assert that quartans are occasionally epidemic, malignant, and deadly, but I myself have frequently observed this to be the case. Hence what Boerhaave †, Hoffmann ‡ and others have affirmed concerning the salubrity of quartans and the longevity to which they lead, applies to the *benign, genuine, and depurative* kind only. Likewise the praises bestowed by Hippocrates on this fever must be limited; for he remarks || : “Persons

The quartan sometimes malignant and fatal.

seized with a quartan are not much troubled with convulsions; but if they have been affected with convulsions before the coming on of the fever, on its arrival they are freed from them." For it has been already shewn that not only are epileptic fits joined with it; but I have not unfrequently seen other spasmodic affections of the nerves which had arisen from the same. Nor does what the author of the sixth book of Epidemics observe § hold universally, namely, "That such as labour under a quartan, are not attacked with any disease of consequence; but if they do labour under a disease, that, on a quartan's supervening, they are freed from it." For experience has frequently shewn both to be false. Instances are recorded of pleurisy, or other acute diseases, not unfrequently having supervened upon a quartan, especially during the winter, and that they are not cured, when they happen to have existed previous to the fever, by the supervening of a quartan. A fact which was known to the most ancient physicians **. Nor will any advantage probably be derived from a quartan which may not either be expected or derived from other fevers both continued and intermitting, as Hippocrates †† in various parts of his works has affirmed.

The praises of the quartan to be limited.

Any good to be expected from a quartan, is in common with other intermittents.

* L. iii. observ. 32. schol. et 35

† Vid. Trinka, l. c.

‡ De cogn. et cur. morb. § 745.

|| Med. Syst. T. iv. P. 1. sect. 1. c. 2. Thef. Path. § ix.

§ Aph. 70. sect. v.

** Sect. vi. n. 9.

†† Coac. 159. Aph. 5. sect. v. 57. sect. iv. Coac. 354. aph. sect. vi. 51. 52. vii. Coac. 449. aph. 40. sect. vi. 44. sect. vi. Coac. 475. 222. 477. 479.

186. But the quartan is extremely apt to return ; at each time, however, it gradually becomes milder and less obstinate, ^{It is very apt to return.} and, for the most part, after a few paroxysms is easily removed, or goes off spontaneously. An opinion likewise prevailed formerly, that a person is never attacked a second time with this fever. But this is completely refuted by Sennert, Heverman, Donatus, Gasp. & Reies, Wier, Madaus, and Benivenius*. As a tertian and quotidian are frequently changed into a quartan, so does the quartan in its turn degenerate into a tertian and quotidian ; nay, sometimes into a continued, slow fever ; which is more dangerous. It is said to stick ^{Obstinate in pregnant women.} by pregnant women till child-birth ; afterwards to cease, but to be imparted to the child, who continues to be affected with it. It is resolved not only by sweats and the coming on of

the spring, like other intermittents, but also not unfrequently by a scabby eruption †, the miliary fever, the hemorrhoidal flux, spitting, small ulcers on the lips, and by black urine ‡, supervening. According to Vogel || it is sometimes removed by a tumour growing within the cheeks, and likewise by swelling of the abdomen, or diarrhoea. On the other hand, an epistaxis occurring in a quartan portends an unfavourable issue §; and the danger is much greater if coagulated blood is passed in great quantity by stool; for Heurnius has observed death to take place on the succeeding day **.

* See passages in Trnka, l. c.

† Not only quartan but also other intermittents extremely apt to recur, have been observed to be resolved by a scabby eruption. I have seen the autumnal intermittents of the year 1765, resolved in the spring time by this excretion.

‡ Haën Rat. Med. continuat. T. 3. p. 174.

|| De cogn. et cur. morb. § xix.

§ Hipp. aph. 3. sect. viii.

** In Hip. aph. 23. sect. iv.

THE CURE.

187. Before the discovery of the bark, this fever was universally considered as the disgrace of physicians, because generally all the aids of medicine were of no avail in it. But this is no longer the case now; for by means of that remedy, like

other intermittents, it is for the most part easily subdued. It is often necessary, however, to prepare the way for it by blood-letting *; by which alone quartans of long standing are said to have been overcome; by the cautious and timely employment of emetics, cathartics, fixed and neutral salts, aperients and bitters. But in order completely to answer our expectations it must be of the very best quality and not too cold; and must be given more liberally than usual. For it is well known, that when it is administered too sparingly, the fever goes on either not at all diminished, or, if it is, very readily returns a short time after, and generally yields to the more liberal use of this remedy. If the fever, therefore, when it is violent, is removed by the bark taken in sufficient quantity, why should its return not be prevented by taking the remedy in the same manner? Hence the dose must be increased so as to be sufficient to subdue the cause which has given rise to the quartan, and continues to cherish it, whether it be greater than usual, or more difficult to be treated. Which I myself have experienced more than once, in an instance of the cure of the pernicious kind, and other practitioners of very extensive experience have noticed the same †.

* Störck (Ann. Med. 2. p. 164. ed. Amstelod. 1779), had two patients ill of a quartan, whose pulse, during the time of the intermission, was strong and regular; the appetite good,

and the strength sufficient. The fever at the termination of each paroxysm was not resolved by sweat. When the fever was violent, reduced the strength, and occasioned emaciation, he administered the bark, but in vain. An ounce of it neither rendered the fever milder, nor diminished the cold, but made it much greater and more troublesome. Upon the second interval he increased the dose to an ounce and a half, but to no purpose. He then exhibited the extract in the same quantity and with the same effect; nor is that to be wondered at, since the extract is less efficacious. He tried a variety of remedies, and among others sudorifics; at length he applied to the spine of the back and os sacrum, friction and flannels impregnated with the vapours of camphor, and caused the back and whole body to be covered with them and blankets. Thus by exciting sweat he restored both to health. He has made mention of neither purging nor bleeding. The pulse also during the apyrexia was strong. Had he reduced the fulness of the vessels and cleansed the *prime vie*, would the bark have proved nugatory? Is an ounce and a half, or even two ounces and a half, the greatest dose on giving which in quartans requiring generally a still greater, its inutility can be deduced?

† Trinka, l. c. P. 2. sect. 2. cap. x. the whole of which should be read, because the opinions of all authors concerning the employment of the bark are there reviewed. But no where can more ample instruction be got with regard to the choice, preparation, and powers of the cinchona, than in Rahn (*Adv. Med. Pract.* vol. 1. sect. 1.) nor more salutary advice respecting its use, than in sect. 2. in which a very proper judgment of the observations and opinions of others is formed.

188. I do not deny, however, that sometimes peculiar faults of the fluids or viscera are combined with the febrile cause, which not only make it more obstinately resist the bark, but likewise return on the slightest occasion. On which ac-

What substances
may sometimes
be added to the
bark.

count it is sometimes very advantageous to add to the bark sal ammoniac, sometimes gentian root, sometimes the concrete juices of bitter or antiscorbutic herbs, sometimes extract of hemlock *, sometimes sweet mercury seven or nine times sublimed †, sometimes steel. Hence innumerable formulæ of this kind are to be found in authors, and are highly extolled for their efficacy in removing especially obstinate quartans ‡. Among those must be mentioned electricity, by which alone in the middle of winter, I removed a quartan with which a clergyman had been affected for some months. After the application of the electricity for some time, the sweat flowed abundantly. Thus within a few days the fever was completely removed.

* Whoever reads the ingenious Störck's *treatise on hemlock*, with the observations of others, published at Vienna in the year 1761, and learns the virtues of that remedy in many diseases, will not wonder that extract of hemlock should increase the efficacy of bark in most obstinate quartans. Frambalgia, a skilful physician and particular friend of mine, informed me that in a particular epidemic intermitting fever, when he found the abdominal viscera obstructed that he employed extract of hemlock with the greatest success, and sometimes by means of it alone removed the most obstinate fevers.

† Riverius called it the calomel of Turquetus, as may be seen in his medical observations. With this he used to treat obstinate intermittents, and such as were apt to return, very successfully. Nay, it is extremely probable that his celebrated specific against quartana, with which he used quickly to re-

move fevers of long standing, owed the greater part of its effect to the calomel; although its real composition was never discovered. But to hazard a conjecture, among the various opinions entertained concerning Riverius's remedy against quartans, that of Trnka's seems most probable, who thinks that it consists of Mercurius vitæ, or more properly *precipitate of antimony*, heated in an earthen vessel, until it emits no more smoke, the *Calomel of Turquetus*, and *Diagrydium*. See Trnka, l. c. P. 2. sect. 2. c. 3. § xii. h. Likewise the following composition is considered by some as the true *Antiquartan* of Riverius. Rec. Merc. dulc. gr. iv. M. f. pulv. Let it be given four hours before the accession; and repeated three times. But Riverius declares that he never employed antimonial remedies. It is proper also to consult Schulz's *Dissert. de Mercurialium usu in febre quartana curanda*.

† See Trnka, l. c. xi. *de febrifugis compositis*, § cxxviii. where in particular are adduced various formulæ taken from distinguished writers,

189. But the remarkable efficacy of sweet mercury, or calomel, in removing quartans is justly celebrated, especially if there be any syphilitic taint present to keep up the fever. But even when no such thing is suspected to be present, it frequently produces remarkable effects, both alone and in conjunction with the bark, not only as a *cathartic*, but also as an *alterative*. I am in the habit of employing, therefore, to the extent of four or six grains daily, added to the bark, and I continue its use a long time, in such a way, however, that I am sometimes contented with even a less

The febrifuge
power of sweet
mercury.

dose, or now and then intermit it, if it occasions salivation, or too great looseness. Hoffman * recommends the powder as being most efficacious, into the composition of which sweet mercury enters. He likewise speaks highly of a particular *electuary* †, and a *vinous infusion* as being of remarkable virtue ‡, after the manner of which any one may prepare different ones, according as the indications and circumstances vary.

* Med. Rat. Syft. T. iv. P. 1. sect. 1. c. 2. method. med. § viii. The powder is thus prepared: Rec. pulv. cort. peruv. drachm. 3. Regul. antim. medicin. drachm. 2. Merc. dulc. ritè parat. croc. Mart. tenuiss. Arcan. dupl. Myſicht. an. drach. 1. ol. destillat. Menth. gutt. 4. M. f. pulv.

N. B. Mercurius non terendus cum pulvere, sed cuspidatum cultelli permiscendus est.

The dose of the powder is from half a drachm to a whole one, reduced into the form of an electuary with the juice of sambucus or julap of roses. To be taken morning and evening during the time of the apyrexia. It ought to be fresh, that it may not prove hurtful. It should be taken, however, only by strong patients, at the same time observing a proper regimen. It is recommended by others also.

† L. c. sect. 1. cap. 1. § ix.

The Antifebrile Electuary of Hoffman.

Rec. Roob. Samb. unc. sem. Pulv. cort. peruv. drachm. 6: pulv. flor. chamom. vulgaris drachm. 2. Extract. cent. min. pulv. caryophyl. an. drachm. sem. syrup. acet. citri unc. 1. et semis. M. f. elect.

N. B. Addi quandoque potest antim. diaphor. Theriac. vel sal. etiam ammoniaci drachm. sem. Finito paroxysmo altera q. q. h. detur drachm. sem.

But for such as are of a weak habit, and have a delicate stomach, the remedy may be prepared in the following liquid form:

Rec. Cort. chin. unc. 1. cascaril. cinnam. acuti, sal. tartar. an. drach. 1. Aqu. flor. chamom. vul: lib. 1. vini tantumdem. Digerantur leni calore. Colat. add. syr. cort. aurant. unc. sem.

Dos. unc. 1, quovis bihorio; vel unc. 2.

† L. c. § vii.

The Infusum vinosum of Hoffman.

Rec. fibrar. helleb. nigr. rad. polypod. querni, fol. semm. s. s. an. unc. 1, herb. absinth. centaur. minor. card. benedict. trifol. fibrin. an. m. sem. Rasur. ligni Calubrin. cortic. chin. aurant: recent. an drach. 3. Limatur. Mart. unc. sem. Tart. tartarifati tantumdem. Contund. irrorentur drachmis duabus spirit. sal. amm. urinos. Misceantur, et duabus vini mensuris infundantur.

It answers all the indications of cure; let a full draught of it be taken every morning.

190. But nothing is better than steel, when intermitting fevers, of whatever type

When steel should be employed.

they be, have injured the tone of the solids and condition of the fluids by their continuance, so that not only a bad habit of body, but also languor, and indigestion come on. For then the tonic power of the bark is incapable of strengthening the body, and, though the fever has been now and then checked by it, of preventing a return of the complaint. With this view Allen * recommends the *decoctum nigrum* †, to which in the case of delicate pa-

tients he advises *Tinctura Burgundica* † to be added. I myself, induced by the authority of Allen, more than once have employed the bark conjoined with steel in a liquid form, to prevent the recurrence of fevers ‖; with the most beneficial effects, and have confirmed the efficacy ascribed to such a preparation.

* Synops. univers. med. pract. cap. 1. art. 48.

† The Decoctum Nigrum.

Rec. cort. peruv. pulv. unc. 2. chalyb. cum tart. præp. unc. 1. coq. in aq. font. lib. 3. lento igne ad lib. 1. et sem. addend. sub fm. coction. cinnam. acutiss. drach. 2. Colatur. add. aq. absinth. magis compos. l. 1. sem. M.

‡ The Tinctura Burgundica.

Rec. Cort. peruv. pulv. drach. x.

Calam. aromat.

Cinnam. an. drach. 1.

Cort. aurant. drach. 2.

Cochinell. drach. sem.

Macerate per biduum in vin. alb. Ulissoponens. lib. 2. et sem. filtratur, &c.

Dof. cochlear. n. iii. vel. iv.

‖ Hamilton (De Prax. regul. et febr. miliari. c. 9.), pronounces salt of wormwood to be excellent in preventing the recurrence of fever. But the formula, in which I conjoin the bark and steel, differs somewhat from that of Allen's as described. It is as follows.

Rec. Cor. Peruv. contus. unc. ii.

Limatur. Martis. unc. sem.

Tartar. albiss. unc. 1.

Aq. flor. chamom.

Vini albi an. lib. 1. fem.

Decoq. ad tertizæ partis consumpt. Colat. unc. iii. vel iv. dentur quotidie mane, et repet. per dies xxx. vel xl.

It may be sweetened at pleasure by the addition of some agreeable syrup.

191. If edematous swellings, or dropfy, or obstructions, supervene in particular upon a quartan of long standing, they are removed, together with the fever, by persevering in the use of the bark alone; especially if the patient has been weakened not only by the continuance of the fever, but also by repeated cathartics. And, lastly, his strength must be confirmed by the use of steel *. The edematous swellings are said to be removed, particularly by salt of Tartar, to the extent of fifteen or twenty grains every morning for a week, and the effect is said to be promoted by giving the salt in an infusion of bruised juniper-berries †. The practitioner who knows how to use the remedies already enumerated, (187. to 191.), will feel himself in no need of any of the secrets and antidotes every where celebrated by medical authors.

* An eminent lawyer of Alexandria, in the prime of life, and in other respects of a good habit of body, laboured under a quartan for several months; in consequence of which, not only his legs and thighs became very much swelled, but

he was likewise attacked with strangury; and what urine came off was red, thick, and lateritious, with the same kind of sediment. In addition to which, there was most troublesome thirst. The colour of the face and whole skin inclined to a palish yellow. The abdomen was distended with flatus. The strength was reduced, and the appetite almost entirely gone. Hence, it was not without reason that he dreaded the coming on of ascites. Until then he had attempted the removal of the fever, by means of frequently repeated cathartics, neutral salts taken in great quantity, and long continued, bitter decoctions and aperients, nor had he neglected to try the essential salt of Cinchona, in which, without reason, he placed great hopes; but all was to no purpose. He had most religiously abstained from the liberal use of pulverised bark. At length, being nearly reduced to the last degree of weakness, he caused himself to be removed to Pavia, although the winter had set in, to obtain what medical aid he could. The fever still preserved the type of a regular quartan, but inclined to assume the continued form. After a careful examination of every particular, I at length concluded, that the principal disease was still a quartan, and that the other inconveniences were to be considered as symptoms of it, arising from excessive atony of the solids, and a watery dissolution and thinness of the fluids. I, therefore, made him lay aside all other medicines, and have immediate recourse to the bark, trusting that by means of it alone, not only would the fever cease, but together with it, by continuing the medicine, that all the other symptoms would be removed. And the event justified my expectations. The fever immediately disappeared, and never returned again; the swellings were gradually dissolved; the urine flowed freely, the appetite returned, the strength was restored; in one word, the former good health was recovered. Forty days after the commencement of this treatment, he returned home in perfect health. But, in order to confirm his strength the more, I advised him, on the approach of spring, to continue long

in the use of Boerhaave's *vinum iussu* of Mann, and to take moderate exercise on foot, and in the way of gestation. In consequence of which, he regained his former health and strength. It is now some years since he recovered. I lately had a friendly visit of him, when he enjoyed as good health as if he never had been ill.

† Lange Miscel. veritat. Fasc. 1. p. 68.

FEVERS WITH LONGER INTERVALS.

192. With regard to the other intermittents characterised by longer intervals, (64. 65.), since these neither differ in their nature, nor have any thing which requires that the plan of cure should be altered, if they do not depart of themselves gradually, likewise, they very readily yield to almost the same remedies as are mentioned in the general treatment of intermittents, (106.), and lastly, to the bark. The same may be said of the fevers called *larvata* and *topical*, (67.), or rather of diseases returning periodically, without any change of the pulse; for they require no other kind of cure than the intermitting fevers of the nature of which they partake.

THE SUBCONTINUA AND SUBINTRANS.

193. We have already explained, (69. 71. 127.), what is meant by the term *subcontinua*,

and what by *subintrans*. Any intermittent, whether quotidian, tertian or quartan, may pass into them. When that happens, immediately after the general evacuations, (108. to 116.), we must have recourse to the bark, in the way already proposed, (127. 128.). For though they no longer intermit, they still retain the nature of intermitting fevers.

A a 3

PART II.

OF

CONTINENT FEVERS.

194. **I** HAVE named those fevers *continent* *, (61.), which go through their stages, as it were, in one course, and are called by the Greeks *ευνεχες*. Hence, they in particular seem to be simple fevers, or those of one course, and are considered as being so. Such, however, is the nature of their continuance, that the violence of the fever, and intensity of the symptoms, is not at all times the same; but at the beginning, and during the remission of the disease, all the symptoms become milder, while they are aggravated during the increase and at the height of the fever, as usually happens in other diseases.

A a 4

* It may be observed, however, that Morton has named those fevers *continent*, which others call *remittent* and *synchea*, using the term differently from its general acceptation; but whether through mistake, or designedly, does not appear certain.

195. It must not, however, be supposed, as Torti *, Lieutaud †, Sauvages ‡, De Haën ||, and other excellent physicians, very properly remark, that those fevers go on to their conclusion without any remission of the intensity of their symptoms.

What the nature
of their conti-
nuance is.

- For although they are neither aggravated and remit at stated times, like *remittents*, nor have an intermission, like *intermittents*; generally, they become less severe in the morning; but after taking food, or after mid-day, or at sun-set, or from any evident cause, as the method of cure employed, affections of the mind, speaking, or walking, they are gradually aggravated; or, lastly, from intensity of the causes itself, and from accumulation of accidental symptoms, they now and then, without observing any regular order, suffer an exacerbation. Let no one, therefore, suppose that such is the uniformity of their continuance, that no remission or increase ever occurs: for patients are better at one time than another; but such variations are neither so manifest, constant, nor regular, as they are in true remittents. Which had it been properly observed

by those who have employed the word *continent* according to its strict signification, they would not probably have been disposed to doubt whether such fevers ever happen, (61.), or had been seen, since, though they occur but rarely, they do not escape the observation of practitioners §.

* Therap. special. l. i. c. viii. p. 63.

† Précis. de Med. livr. i. sect. i. p. 2.

‡ Nosol. Meth. cl. 2. ord. i. charact. ord. et gen. 2.

§ De febr. divis. Divis. iv. schol. i.

§ Vid. Sellius Rudiment. Pyretolog. Ord. i. Gen. i. p. 94. towards the end, who was convinced from his own observation that such fevers exist.

196. It has appeared probable to most authors *, that in these fevers the blood is principally affected, and is changed from its natural state; because such constancy of the fever could scarcely subsist, if its primary cause did not exist in the blood; hence Ballonius † named those fevers *venous*, in order to distinguish them from those named *gastric*, or such as have their cause in the abdomen or intestines. It may sometimes happen, that the origin of the febrile cause may exist in the stomach, but has now passed in such quantity into the blood as to be sufficient to preserve the febrile commotion in the same tenor to the end of the disease. The continued fevers that arise in the former way, are called *primary* or *essential*; such as take place in the latter are named *sc-*

condary. Hence we may understand in what manner an *intermitting* or *remitting* fever may pass into a *continent* one, as sometimes happens.

* Vid. Sell. l. c. ord. 1.

† Oper. T. 1. L. 2. epidem. p. 78. edit. Thevart.

197. If it be denied, however, that the blood is always vitiated in these fevers. (194.), and that the febrile cause in them all is to be referred to it, but that it sometimes is situate in other fluids, and especially the lymph; nay, that sometimes the nerves and brain, and other solids, are chiefly affected; I shall not oppose it, provided such a vitiated state be admitted, to support the febrile motion in such a manner as to enable it to perform its course uniformly and without remarkable remissions. For various species of *ephemeræ* and *synochi*, and likewise slow nervous fevers and hectics, which are usually referred to the continent kind, appear not to be referable to any vitiation of the blood; which had been properly attended to by the ancients themselves, and, therefore, a variety of causes and seats were ascribed by them to each, as will appear in the sequel. But the principal kinds of fevers, of which we propose to treat apart, are the *ephemeræ*, the *synochus imputris*, the *synochus putris*, the *slow malignant continent fever*, called *nervous*, and the *hectic*.

THE EPHEMERA.

198. That fever which by the Greeks is named *Ephmera*, and by us *Diaria*, is terminated by a single paroxysm with-
 in one day, or the space of twenty-four hours, or little more. For it goes through its course during an interval of seven, twelve, eighteen, or even twenty-four hours. It is sometimes also extended to thirty-six hours, which is the utmost length to which it proceeds. When it terminates within those limits, it is generally called *simple* and *genuine*.
 But when it is protracted beyond them, and goes off only on the third or fourth day, it most commonly obtains the name of the *extended ephmera*, or that consisting of several days, or simply *continent fever*.

Meaning of the term.

Simple or genuine ephmera.

Extended ephmera, or that consisting of several days.

199. But when it exceeds one day, it does not always hold on like a continent fever, nor is it always terminated by one accession, but sometimes, after the manner of an intermitting fever, it has several lesser successive paroxysms, until it is entirely finished; as I have repeatedly had an opportu-

The symptomatic remitting ephmera.

nity of observing. When that happens, however, the ephamera is generally

The doubled or tripled ephamera. *symptomatic*, not *primary*, and seems rather referable to remitting fevers.

But if it be *primary*, and yet be not terminated, as I have already said, before several paroxysms, which I would also allow, occasionally happens, in that case perhaps it may not improperly be named *duplicata* or *triplicata*.

200. The pure and simple ephamera, is always excited by evident causes, by watch-

The causes and symptoms.

ing, intensity of thought, cares, grief, rage, the heat of the sun, the warm bath, exercise, labour, fatigue, intoxication, plethora, fasting, excessive evacuations, sudden cold, the fumes of charcoal, and the like: Which, however, although, according to Galen *, it is ~~not~~ separable from the ephamera, is observed to be in common to other fevers also, of which not a few frequently begin in consequence of some evident cause. It usually attacks particularly young people, and those of the sanguineous temperament, and otherwise previously in a good state of health. Lermius observes: "It is not preceded by loathing
" of food, nor spontaneous lassitude, nor is there
" a propensity to sleep, nor much yawning, horror, or cold; but it suddenly comes on altogether; nor is it attended with any very great
" inconvenience when it has once commenced;

“ I mean pain of the head and stomach, and
 “ likewise nausea, heat, restlessness †”, &c. But
 an agreeable glow spreads over the whole body,
 as is felt in *anger*, and *during drinking*; for the
 agreeableness of the heat is the constant and pe-
 culiar symptom of this fever ‡. The skin is soft
 and moist. But the pulse is great, though mo-
 derately quick, and frequent, not violent, more
 regular and free with softness, and more equable
 than it usually is at the commencement of other
 fevers.

* De differ. febr. lib. 1. c. 7. text. 2,

† Medicin. obser. l. 1. febr. diaria.

‡ Galen l. c.

201. But the quickness of the pulse shews it-
 self more in the diastole than systole;
 because the arteries are twitched less, Certain symptoms
considered.
 and, therefore, not excited to con-
 tract so soon *. For it is a small cause which irri-
 tates the fibres of the arteries, and stimulates
 them to contraction. The urine is said to be
 not at all, or little, changed in this fever, except
 that which comes off towards the end, which is
 affirmed to be somewhat more impregnated and
 concocted. But to others it appears a peculiar
 symptom, and inseparable from this fever, that
 the urine is concocted on the very first day. It
 is not resolved by profuse sweats, like intermit-

ting fevers, but frequently merely by an increase of the insensible perspiration; sometimes by copious halitus, and humid vapour or moisture; sometimes likewise by sweat, but by no means copious. This, however, does not invariably hold; for I have not unfrequently seen such a fever as this resolved by copious sweating, epistaxis, vomiting or purging, and likewise by pustules rising about the lips †.

* Scardon de cogn. et curand. morb. lib. 4. c. 2. p. 65. in comment.

† Galen l. c.

202. Nor does it uniformly commence on a sudden without shivering and cold: for I hold it to be an undeniable fact, that it actually does come on with shivering and cold; nay, that it is likewise conjoined with pain of the back and head, nausea, or vomiting, which happens chiefly in the case of the *ephemera extensa*, or that consisting of several days, and principally during the summer-season, and prevails, as it were, epidemically in certain states of the atmosphere. It is most invariable in that which precedes an external eruption of erysipelas, and which on that account is called by some *erysipelatosâ* *. Although, to speak freely, neither does this fever always preserve the type of an ephemera, — and is therefore,

Other more rare
symptoms.

improperly referred by some to the *ephemeræ* †; —nor does it come under the head of pure and solitary fevers, but rather under that of *exanthematic febrile diseases*, of each of which we shall treat by itself hereafter.

* Sydenham *observat. med. circ. morb. acut. histor. et curat. sect. 6. c. 6. p. 322. ed. Patav. 1700.*

† Vogel. *Gen. Mor. cl. 1. gen. 68. et de cog. et cur. præcip. hum. corp. affect. § xlvii.*

203. But when it comes on without cold or shivering, it is easily distinguished by this very circumstance from intermittents and remittents; as they almost always begin with cold and shivering. When, however, it begins with cold and shivering, it is not then so easy a matter to distinguish it with certainty from these as well as other *continent fevers*. We then form our judgment from its progress. For if the accession be longer, as it is in fact when it extends beyond one day, then it exceeds the accession of an intermitting or remitting fever in its course. But it falls short of the *synochi*. All these circumstances, however, vary extremely. Hence it often happens, that it cannot be distinguished from others until after its disappearance. Thus it is sometimes an easier

How it may be distinguished from intermittent and remittent fevers.

Likewise from the putrid synochus.

matter to cure, than to distinguish, an ephemera.

THE PROGNOSIS.

204. Hence, it generally happens that this fever may prove hurtful, before it is recognised. In general, however, when it is *pure* and *benign*, it is free from danger : but this is not the case with the *compound* and *malignant* one, of which hereafter. It is for the most part more apt to attack bilious people devoted to active life, and affects them more severely. When it runs into the *extended* form, there is reason to apprehend its degenerating into the *synochus imputris*, or *putris*. The first is distinguished by the greater degree of heat and redness of the face ; the second, according to Avicenna *, is pointed out by remission without sweat or moisture, or if it takes place with sweat, without *apyrexia*, and by the *borripilatio* ; by an unequal, quick, small, contracted pulse ; sharp and dry heat ; the head-ach, if it be not absent, continuing ; and, lastly, by greater violence of all the symptoms : although it may be questioned whether or not it was an ephemera from the beginning, or putrid synochus itself. But if the causes act very violently on the body, and the patient be of a very dry

When it degenerates into simple or putrid synochus and hectic.

habit, and the fever be protracted beyond its natural time, it is a very old opinion, that it may be changed into a hectic. And this they say is indicated by great heat at the wrist, by uniformly continued fever, by the increase of heat in all the limbs after taking food, by the hard, small, but regular pulse, and by the other marks of hectic fever. But it may also be asked here, Whether the ephemera then passes into a hectic, or has it been so from the beginning? Hippocrates † denominated all fevers, arising from buboes, *bad*, except *ephemera*. But it seldom happens that a fever arising from buboes is to be found similar to an ephemera. For it is generally of the *suppurative* kind, and goes through various courses, and is more or less severe and lasting, according to the difference of the kind of tumor from whence it arises. But let it be an ephemera. Whether or not, because it proceeds from a bubo, is it absolutely of a bad kind? If a malignant and pestilential bubo has given rise to it, what can be esteemed more fatal than it? The opinion of Hippocrates, therefore, seems to require being limited.

* Lib. iv. sect. 1. Tract. c. 8.

† Aph. 55. sect. iv.

205. Pure and primary ephemera is produced

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by one or other of the evident causes, the most common of which I have already mentioned, (200.), without any considerable previous taint of the blood and fluids, as Ludwig informs us *. For by means of them either the sensibility alone, or the irritability, is so excited, that a febrile commotion, though not considerable, nor to prove permanent, ensues; or something acrid is evolved in the blood itself, or is introduced into it, or that which ought to have been excreted is retained in the body, and is of such a nature as to affect one or other of the principles I just now mentioned †, but may be readily and quickly eliminated. Nor would I believe it to proceed from these causes only, but likewise from excess and congestion of the blood, from pain, a wound, contusion, fracture, luxation, difficult birth, and checking of the catamenia, milk collected in the breast, and causing a painful swelling, catarrh, and the like; and the ephemeræ will then be *secondary* or *symptomatic*, not a little different from the *pure* and *genuine* kind. It does not, therefore, always proceed from vitiated blood, so as to deserve being esteemed *excrementitious*, as Quesnay ‡ too hastily concluded. For it must not at once be enumerated among the *excrementitious* fevers, because it requires no purulent concoction, as they call it, and is quickly and easily resolved; since that rather points out

the lightness of the cause, or its being easily corrected or removed, than the *impure* and *excrementitious* nature of the complaint.

* Instit. Med. Clinic. P. 1. c. 1. § cccxxxix.

† The ancients, from preconceived notions, considered an *ephemera* as a disease of the *spirits*. Hence perhaps Scardona (De cogn. et cur. morb. lib. iv. c. 2. p. 58. et seq.) approached to them when he observed, that its proximate cause was a derangement of the *spirits*. But this, he thinks, is shewn by the passions of the mind, the fumes of charcoal, and such other remote causes, by which it is excited, and by which the nerves seem to be particularly affected. Yet all the remote causes do not act on the nerves. It is not without reason, therefore, in my opinion, that my conclusion is drawn, namely, that the *sensibility*, or *irritability*, or both, are excited in an *ephemera*, but in such a way, that the fever thence arising is not very great, and is soon allayed.

‡ Des fevrr. contin. T. 2. p. 349.

205. Not a few distinctions of *epheineræ* are to be found in authors. Several common ones are not without their utility; by which they are divided into *primary*, *secondary*, *symptomatic*, *sporadic*, *epidemic*, *pure benign ones*, *compound* and *malignant*. And I am somewhat disposed to think that they may likewise be divided into *putrid* ones; for I see no reason why they may not occasionally be conjoined with a certain tendency of the blood to putrefaction. The others taken from their causes may easily be omitted, since they must appear

The distinctions.

manifest to every physician who attends to the subject *. In the same manner those which are named from the period of their usual appearance, *menstruæ*, *bimestres*, *trimestres*, and *annual*, seem to be very generally understood. Nosologists †, among the species of ephemera place the *milk fever of puerperal women*; which, however, is seldom an ephemera; and since it generally has the type of a remittent fever, shall be particularly described elsewhere.

* Among the ancients Aricenna, and among the moderns Forest, have divided ephemeræ into as many species as there are evident causes; and, therefore, according to them an ephemera from low spirits and grief is one thing, and that from hope and fear another; that proceeding from deep thought is different from one proceeding from rage; those occasioned by watching, sleep, evacuations, pain, fainting, hunger, thirst, obstruction, satiety occasioning nausea, and repletion, abscess, dryness, and roughness, heat of the air or bath, constipation from cold, wine, warm food, and the like, all differ from each other. Under this head are arranged the *symptomatic ephemeræ* arising from pains, wounds and fractures, luxations and contusions, mentioned by Hoffman, the *menstruæ* or *catameniales* of Rammazzini and Freind, the *erysipelatose* of Sydenham and Sennert, and others enumerated by Sauvages, for the cure of which, since it depends entirely on the primary disease, it is sufficient to point that out.

† Sauvag. l. c.

THE CURE.

207. The consideration of the evident causes, however, must not be neglected, because the cure must be carefully adapted to the variety of these. In particular, we must cautiously inquire whether the ephamera be *simple, extended, benign, primary, secondary, or symptomatic*? When it is simple, and arises from a slight cause, the cure is performed almost by abstinence alone, or very spare diet, by copious, tepid, temperate, very gently aperient, diaphoretic drink, sometimes by throwing in an injection to clear the intestines. The purest water should be given to drink, or that which is acidulated with lemon-juice, or decoction of barley, tea, or elder-flowers, or emulsions of the cold seeds, as they are called. If the patient be of a plethoric habit, or the fever arise from plethora, (in which case it is called *plethoric*), as appears from the previous indulgence in rich living, the copious use of vinous liquors, an indolent, easy life, the sanguineous temperament, a full habit, diminution of the usual evacuations, red face, fulness of the veins, universal heat, violent pulsation, especially in the temporal arteries; some dyspnœa, torpor, and heaviness of the limbs, strong, full

The kind of drink
to be given.

pulse,—in that case, I say, it is proper immediately to diminish the quantity of the blood by venesection, especially when there is head-ach, or its approach may be apprehended, to prevent prolongation of the disease; which happens chiefly when on the second day no sweat breaks out, and the fever does not become milder. In such circumstances it may even be repeated. Nearly in the same way must we treat the *extended* *ephemera*, and also the *symptomatic*, which gives reason to apprehend the presence of inflammation, (205.); not omitting, at the same time, the remedies which more properly belong to the cure of the primary disease.

208. Nor must we pass over those remedies which clear the stomach and intestines of *fordes*, if the fever originates from excess in eating or drinking, from repletion, or retention of the feces, as will readily appear from a knowledge of previous circumstances and the united symptoms. Galen *

When purging
should be em-
ployed.

The bath.

orders those who are accustomed to the bath, on the fever disappearing, to be bathed; by means of which any remains of the fever are removed, and the body rendered moist and cool. But in modern times, when the bath is less frequently employed, the same end may be attained by rest, spare diet, keeping up the perspiration, and by gently purging the *primæ viæ*. These instructions must

be understood as applying to the *benign* and *pure ephemera*. For the nature of the *compound* and *malignant* one is widely different. And with regard to the latter, according as foreign affections are combined with it, or it is excited by several causes, different, foreign, and unusual phenomena, are exhibited, which may somewhat affect the method of treatment, and the termination of the complaint, as appears chiefly in the *symptomatic ephemeræ*, (205. n. †), which generally belong to the *complicated* kind.

* De art. curand. ad Glaucon. l. 1. p. 31. et 39. ed. Junt. in 8. Venet. 1542.

THE MALIGNANT EPHEMERA.

209. I call that the *malignant ephemera* which, in point of shortness of its course, and constancy, perfectly resembles Meaning of the ephemeræ maligna. the ephemeræ; but exceeds them much in dangerous symptoms, as having a poisonous cause, more inimical to the animal and vital powers, difficultly overcome, and generally proving fatal. But, accord- Of the epidemic ephemeræ. ing as this cause is either generated in the body spontaneously, or proceeds from the general infection of the air, or is communicated by means of an infectious miasma, it is either *sporadic*, *epidemic*, or *contagious*. It is a disease of very rare appearance, though melancholy in-

stances of its occurrence are recorded. I shall proceed then, to treat first, of the *epidemic ephemera*, and particularly of the celebrated species, named by Sauvages * *ephemera sudatoria*.

* Nofol. Meth. cl. 2. Gen. 1. spec. 7.

THE EPHEMERA SUDATORIA * EPIDEMICA.

210. It is named from the sweating with which it is accompanied. It began to be History of the disease. observed in England, to the best of my knowledge, in the year 1483, among the soldiers of Henry the Seventh in Milford Haven. It appeared also in London from the twenty-second of September to the end of October, as we are informed by Caius Anglus. It afterwards revisited Britain five times, always in the summer time; first, in the year 1485, or, according to some, 1486; secondly, in the year 1506; thirdly, in the year 1517, when it proved so fatal, that in nearly the space of three hours it cut off many of the first people, and a vast number of the commonalty; nay, in some towns it destroyed one half of the inhabitants. It returned a fourth time in the year 1528, when patients were carried off within six hours; Henry the Eighth himself having narrowly escaped, while most of his courtiers fell victims to it. It entered England a fifth time in the year 1529, proving very destructive, after it had traversed he

whole of Belgium and Lower Germany, Zeland, Brabant, Flanders, Denmark, Norway, and France.

* The Synonyms are,

The Ephemera Britannica Schenckii, observ. med. p. 763. Sudor anglicus Willisii Pharmacop. rational. P. 1. Sect. 5. c. 3. p. 473. Febris Anglica Raymund. Jo. Fortis, de febr. p. 333. Febris pestilentialis contagiosa unius diei Caii Angli de Ephem. Britan. Hydronosus Foresti observ. med. L. 6. obs. 8. Hydropyretion, sudor Anglicus, et febris sudatoria Sennerii de febr. l. 4. cap. 15. Ephemera pestilens, et contagiosa Fracastorii, de Morb. contag. l. 2. cap. 5. Ephemera pestilentialis, according to some, particularly Licataud, Precis de medec. Pyatq. l. 1. p. 41. The Morbus sudoriferus among the Dutch. Among the French, La suette,

DIAGNOSIS,

211. In general, it prevails epidemically in some district after damp, hazy weather, especially in summer or autumn, and usually continues only three or four months. It begins with great loss of strength and fainting. It is sometimes preceded by great shaking and horror, and is followed by acrid moisture of the skin, which shortly becomes a very profuse and continued sweat, frequently ceasing only with the extinction of life, most commonly within twenty-four hours. There is almost always present unusual internal heat, unquenchable thirst, great fear and despair, extreme anxiety about the præcordia, an affection of the stomach like cardi-

Symptoms.

algia, and pain of the loins. Sometimes head-ach comes on, and palpitation of the heart, which remains long even after the removal of the fever. Seven hours after the commencement of the disease, all the symptoms increase. Then delirium supervenes, greater loss of strength, nay, total privation of it, and very deep sleep. On the fifteenth hour the complaint terminates. Very rarely vomiting follows, although the stomach is pained, which is remarkable, considering the very great uneasiness felt there.

212. Even from the beginning the quickness, frequency, and inequality of the pulse, indicate the presence of fever; sometimes the pulse becomes strong and violent. The breathing is quick and broken. The strong in particular are the subjects of this disease; it frequently spares children, old and poor people; but attacks all besides indiscriminately, and proves fatal to them. The natives of the place where it prevails, although they go abroad, do not escape free from the complaint; while strangers have scarcely ever been seen affected with it in the midst of its prevalence. It may be remarked, moreover, that hemorrhages seldom occur, and that no one labouring under this disease is liable to buboes or eruptions, and, if any pustules appear on the surface, they are like the

The pulse and respiration.

Those who are most subject to the disease.

meally eruption ; but this very seldom happens, and only in such as have recovered from the disease. For frequently, during several months, the patients are wasted with night-sweats, in consequence of which the skin becomes universally red. Hence it seems to have some resemblance to the *sweating miliary fever*, commonly called *la suette miliaire* of Sauvages *, although it differs in fact from the *ephemera sudatoria*, because it very quickly forces out the miliary pustules on the surface, and is prolonged to the seventh or fourteenth day.

* Nofol. meth. cl. iii. ord. i. Gen. v. sp. 8.

213. It seems extremely probable, that the cause of the disease is a very subtile and deleterious poison. Perhaps some un-
The cause a peculiar virus.
 known quality of a poisonous nature is contained in the air, whencesoever it be generated, or is supplied by the putrid effluvia proceeding from the earth. Which is rendered probable by the damp, hazy weather, which generally precedes the disease, and by the great quantity of birds found dead under the trees, when this pestilential disorder prevailed in England, with abscesses of the size of vetches under their wings. That virus may also be generated in the system without arising from any other quarter ; for preceding damp, warm weather,

and certain states of the atmosphere, by relaxing the solids, checking the perspiration, and predisposing the fluids to putrefaction, derange the whole animal economy, in such a manner that something is generated within the body, which acts like a poison, and induces a most pernicious epidemic, to be cured only by profuse and continued sweating, in order to expel the noxious and subtile poison.

THE PROGNOSIS.

214. Thus it appears to be a most formidable and quickly fatal disease ; for when it has once set foot in a city, like the plague, it attacks fifty or sixty daily, and cuts them almost all off generally within twenty-four hours. Some sink under it within six or seven hours, and, if any survive the entire day, we may generally entertain hopes of their recovery. But there can be no real grounds for confidence until after the expiration of this period ; and even then the patient is in danger of suffering a relapse. Such as escape the disease, are generally preserved by constant and copious sweats : while those, in whom the sweats do not flow long, either die immediately, or are brought into imminent danger by the supervening of a very bad fever *. But this probably happens in those who are not seized

with this *ephemera*, but another fever of a bad kind, partaking somewhat of the prevailing epidemic; which is neither a new thing, nor what I should suppose difficult to conceive.

* Lientaud (*Precis de Medec.* l. i. p. 43.), I know not on what grounds, writes, that some may arrive in safety at the fourth and seventh day. He owns, however, that this very rarely happens. But to me it appears to be altogether of a different nature from the *ephemera sudatoria*, since it is called by Caius Anglus *a disease of one day*. I believe, however, that Lientaud was deceived by the description which Boyer published of the epidemic fever which raged in the year 1750 in Beauvais, or of another mentioned by Vandermond, in Tom. xii. of the *Diarium Medicum*, neither of which was the *ephemera sudatoria*, as I shall shortly point out, though they were considered as such.

THE CURE.

215. Experience shews that the malignant virus occasioning the disease cannot be better, nor more certainly, expelled, than by spontaneous cuticular

How the sweat
should be pro-
moted.

discharge. For the sweats, howsoever diminished, cut short, or suppressed, induce most certain death. We must therefore, with all possible care, strive to call forth a free discharge of sweat, and keep it out a long time. The patients should be preserved with the utmost attention from exposure to cold. If the sweat remit spontaneously, it must be recalled by increasing the number of blankets and

by diaphoretics. Among these formerly, when the disease first appeared, were celebrated on this account *terra sigillata*, *bolus armenia*, *dittany*, *blessed thistle*, *zedoary*, *tormientil*, *water-lily*, *borage*, *water of forrel* and *matfellow*, and other such remedies, which were considered as being calculated not only to promote sweat, but likewise to subdue the malignity of the distemper: some of which, however, scarcely, if at all, any longer deserve that character. The sweat must not be checked for twenty-four hours; at the expiration of which time, it is said that we may generally without danger diminish the number of bed-cloaths, and carefully wipe off the sweat. Sometimes, however, particularly in such as are of a robust habit of body, it is necessary to repeat the sweating again and again, even for twelve different times; which is supposed to be most necessary when the poison does not seem to be sufficiently expelled, and the disease does not entirely cease.

216. While the sweating is going on, we must cautiously prevent too great prostration of the strength. If, in consequence of the excessive flow of sweat, the strength begins to fail, the patient must be excited with cordials, alexipharmacs and antiseptics, as wine, the juice of citrons and pomegranates, forrel, and other juices usually employed

How to prevent
prostration of
strength.

in the plague and malignant complaints ; and the sweat should be regulated so that the patient may not completely sink under it. For it has been observed, that, while patients were loaded with bed-cloaths beyond what they could bear, from too great a desire on the part of the practitioner to promote the sweat, many of them were suffocated. The cardialgia likewise occasions no small trouble. According to Sauvages *, therefore, we must prevent this by ^{How to allay the cardialgia.} the water of orange-flowers, barley-water with cinnamon ; strong wine, the confectio hyacinthina, or kermesina, and theriac, which are also attended with the advantage of preparing the patient again to stand the sweating. Vinegar also, theriacal waters, and all acefcent substances, seem to be very suitable in this case. Probably camphor, the *liquor anodynus mineralis* of Hoffman, musck, sp. Mindereri, and other remedies at present in high esteem, would have succeeded.

* L.c. near the end of the chap. *de ephemera*.

217. With regard to bleeding, it has always been found hurtful in this fever ; nor ^{Bleeding hurtful.} does it appear that it can be in any way serviceable by itself. Nor is any attention to be paid to Boyer, who, in the epidemic which proved so fatal not many years ago at Beauvais, mentions blood-letting having been of no small

advantage; for the same author, after weighing the matter more deliberately, was at length obliged to own, that that disease was widely different from the *ephemera sudatoria* *. For the distinction will appear evident to every person, if the description of the *sudor anglicus*, or *ephemera sudatoria*, be compared with that of the Beauvais epidemic, published by Malovinius, in his *Historia morborum epidemicorum, &c. Parisiis observatorum* †,

Purging also finds no place in this disease, but it may be admitted towards the end, or after it is overcome. Probably it would not have been improper, when the disease came on, to excite gentle vomiting. For it is well known how much emetics eject the morbid cause in epidemic and contagious diseases, and how much they promote sweating. The management of the diet also is of great consequence. Generally for the first five hours from the commencement of the fever, all drink must be forbidden, after which it may be given: but it must be in place of food. The patients ought to abstain entirely from animal food, nor should they ever be permitted to indulge in sleep, to which they are very prone during the sweating; for unless they are forced by all means to remain awake, they are carried off in an apoplectic state.

* Lieutaud. Synops. univers. Prax. med. l. 1. sect. 1. *sudor*.

anglic. p. 31. edit. Patav. 1777. But the fever treated by Boyer, in the year 1750, at Beauvais, was a particular kind of putrid, malignant fever, to which Sauvages gave the name of *miliaris sudatoria*, (Nosol. meth. cl. iii. sp. 9.). Likewise that one which was seen and described by Vandermond in the year 1759, differs from the present fever, (Jour. de Med. T. xii. p. 354.). For likewise it was of the nature of miliary fevers, which was protracted even to the seventh day, improperly named *la suette*.

† Hist. Acad. Roy. an. 1747. p. 563.

218. I am unwilling to omit any thing which has been found by experience to contribute to the proper regulation of this very distressing disease. It may be proper to consult the salutary advices of Polydore Virgil. He observes: "After many experiments and observations made by the *juvantia* and *lædientia* upon patients, it happened that the following treatment was found of most immediate service in every case. If any one, during the day-time, be attacked with sweating, let him immediately go to bed with his cloaths on; if at night in bed, let him remain at rest, and not move himself for twenty-four hours; in the mean time he must cover himself with the bed-cloaths in such a way as not to call forth sweat, but to permit it to flow spontaneously; he should take no food, if he can bear hunger so long, and should not take more of his usual warm drink, than is barely sufficient to quench the thirst. During this treatment, he must be parti-

cularly cautious against throwing his hands or feet from under the cloaths for coolness, which is a most pernicious practice *. I do not consider it as my province to find fault with any thing in this practice as being carried to a superstitious length ; nor am I anxious to know what the opposers of the sweating regimen may now offer against it ; since, by unanimous consent, it is agreed, that in this fever it was found to be the most efficacious remedy, as in most other virulent diseases, from their commencement, for speedily evaporating the noxious and volatile principle.

* According to Willis, Pharmac. Ration. P. 1. sect. v. c. iii. in my edition, p. 473. col. a.

THE SPORADIC EPHEMERA SUDATORIA.

219. This disease very seldom occurs sporadically, (210.), at least, as far as I know, it is very rarely mentioned by medical writers. Lieutaud alone has mentioned an instance of his having once seen it in a man of thirty years of age, who, after recovering from a slight disease, was preparing to leave the hospital at Versailles. He was suddenly attacked with this severe sweating, (the ephemera sudatoria), and, notwithstanding of various remedies having been employed, was carried off within fourteen hours *. The treatment of the sporadic species of *ephemera* cannot

differ from that already mentioned, (215, to 218.), until experience and reason point out a better and more efficacious method.

* Synopf. citat. l. i. Sect. i. p. 31.

THE EPHEMERA GANGRÆNOSA.

220. It seems proper to class under the head of malignant ephemera, (219.), a rare species of the complaint, but not so rare as the *ephemera sudatoria*, (210. and 219.), which, from gangrene very quickly supervening in some external part, and speedily proving fatal, may be named *gangrenous*. It usually prevails *sporadically*, but never, as far as I know, *epidemically*. It was first described by Hippocrates, in his usual succinct manner*. His words are: "One

" Crito in Thafos, while he was ^{Hippocrates's description.}

" walking, was attacked with a vio-

" lent pain in his great toe; he betook himself to

" bed the same day, being seized with shivering,

" anxiety, and considerable heat; at night he be-

" came delirious. On the second day arose a

" reddish swelling, accompanied with tension,

" which proceeded all over his foot and ankle;

" together with small, black pustules; there was

" an acute fever; while he still continued to rave.

" His stools consisted of pure bilious matter,

“ passed in considerable abundance. He died on
“ the second day †.”

* I. epid. ægr. ix.

† I employ the version used by Hieron. Mercurialis, in his
Prælections on the histories of Hippocrates.

221. Galen, in a commentary explanatory of
this passage *, is of opinion, that
A commentary of
Galen on this
passage. some malignant and poisonous sub-
stance had been introduced into the
foot, from which the pain, tumor, and black pu-
stules arose, but that it was not introduced in
such quantity as to cause the whole injury to
that part ; and that, therefore, the rest being di-
rected to the head, occasioned mental derange-
ment and death. The opinion of
The opinion of
Mercurialis. Mercurialis does not differ much
from that of Galen ; for he also, in
such a case, endeavours to shew that some poison
has been generated in the system, which, attack-
ing the foot first, occasions the severe pain and
gangrenous pustules in it, and lastly transmits the
poisonous and putrid halitus to the præcordia and
brain, thus inducing the sad and fatal symptoms
already enumerated. Be that as it may, I hold
it to be an indisputable fact, that this complaint
was accompanied with fever in the same manner
as the ephemera maligna ; but that it is doubt-
ful whether it was *primary* or *symptomatic*, since
it does not appear from the history of the case

whether the pain preceded the fever or not ; although it is probable that the commencement of the pain in the foot and accession of the fever were simultaneous ; for the patient was seized with shivering and anxiety, and became somewhat warmer than usual, and betook himself to bed upon the same day. A case in point seems to be that mentioned by Petrus a Castro †, of a woman who had been seized with a malignant fever, and on the second day complained of a most acute pain in the right great toe, which cut her off within twenty-four hours. No notice indeed is taken of any swelling or redness of the part, but it is probable that the sudden death was occasioned by the supervention of gangrene ; unless it be supposed that the same thing happened in the present instance, which is recorded in the first section of the second book of the Epidemics, of a grandchild of Temenus, who, in consequence of a severe pain in her toe, became bed-fast, and, it being incapable of containing the disease, it recurred, and she was at length carried off. But a much more similar history is given by Richa ‡, in the following words : “ A lawyer near the Convent of the Theatines, where it leads to the green-market, after supper was seized with a fever. He spent a sleepless night. Next day a reddish tense swelling appeared all over his foot, even extending to his ankle, in the centre of which was seen a blackish spot. He was attacked with mad-

ness. Much purely bilious matter was passed by stool. Shortly after he was cut off by convulsions, beginning at the head. He was of a cynical disposition, and dark complexion, entirely averse to society, in fact a downright misanthrope."

* In prim. Epid. Hipp. comment. iii. N. 26.

† De febr. malig. punct. sect. 3. aph. xli. p. 61.

‡ Constat. epid. Taurin. Hist. 6. p. 48.

222. Should it be considered that the case mentioned by Hippocrates, and that of Richa, come under the head of some species of erysipelas, contrary to the opinion of Hippocrates himself, Galen, Mercurialis, and others of his commentators; all suspicion of there having been any thing of erysipelas in the case will be removed by an illness, not of a dissimilar kind, by which a certain nobleman not long ago was prematurely carried off. He was about fifty-three years of age, of the sanguineous temperament, and a good habit of body, tolerably muscular, endued with a lively imagination and great acuteness. After having bathed his head with cold, nay, ice-cold water for several years, in obedience to the advice of an eminent physician, he began to complain of some uneasy symptoms in his head, and particularly of what he called a certain sense of emptiness and confusion, preventing him from applying to his literary pursuits, as he had been accustomed to do. Hence

Another similar
case to that of
Hippocrates.

he was tormented with the idea of falling into a state of fatuity or apoplexy. Still he discoursed with eloquence, beauty, and at great length ; retained an admirable memory ; and both in company and at public meetings of people of rank, his acumen, perspicacity, the soundness of his judgement, and the copiousness and fluency of his eloquence, gained universal admiration. But he affirmed that this was attended with the greatest exertion, and the most inconceivable effort of his mind. In the mean time his appetite was good, he eat abundance, and digested it well, his belly was natural, he enjoyed sound sleep, and performed all the duties of life properly ; so that any one would have pronounced him to be in a state of perfect health.

223. As he more than once consulted myself, I had an opportunity of examining the state of his pulse, which was Continuation of the account. somewhat harder and more frequent than usual, and more or less irregular, according to the greater or lesser degree of mental disorder. But the dread of falling into a state of idiocy, or of a sudden death, with which his imagination was continually haunted, was augmented by a very uneasy sense of tension, which he said he constantly felt all over his head to the center of his brain. On which account he was in the daily practice of once or twice sending for a physician,

or waiting on one himself, to consult about his complaints; and was so thoroughly impressed with the fear of sudden death or fatuity, that he did not dare at any time to be far from home. Under the influence of such melancholy ideas, he could not be persuaded by any means to undertake a pretty long journey, as had been frequently recommended to him by the physicians whom he consulted; or to cohabit with his wife, a lady in the prime of life, and remarkable for her beauty, or suffer himself to be removed to any considerable distance.

224. At length, in the month of October 1799, after complaining of a slight pain, like a rheumatic one, which had attacked his neck and shoulders, and had been removed merely by the employment of friction, one day, on rising at his usual hour, (about the sixteenth, or a little later *), having slept well on the preceding night, as he passed from one chamber to another, he was suddenly attacked with a pain in his left leg.

Beginning of the disease.

Pain in the leg.

A surgeon, who was usually at hand, immediately examined the calf in which he affirmed the pain to be situate, and carefully hand-

* It is peculiar to the Italians to reckon their time from one sun-set to another; and their clocks always strike twenty-four hours: Hence their hour of noon must vary daily, and, as the day of the month is not defined, the corresponding hour, according to our method of computation, cannot be exactly ascertained. T.

led it in order to discover the exact seat of the complaint. But both in colour and softness, it appeared quite natural; nor did the handling of it occasion pain in any part of it, while it manifested no kind of hardness, not even internally. The surgeon, therefore, that he might not seem to make light of the matter, rubbed his leg all over, having first moistened his hand with Hungary water, and, as the patient was much alarmed, assured him he had nothing to fear. But the pain was so slight that it did not prevent him from going abroad, as he had been accustomed to do, to dine with a friend. After dinner, for which he had sufficient appetite, the pain became greater. He likewise was attacked with

The fever.

slight shivering and cold. On which the surgeon being sent for, (it was at this time about the twenty-second hour), upon finding his pulse feverish, and that he could scarcely put his foot to the ground on account of the pain, he advised him to order himself to be carried home, to go to bed, and as he was now feverish, to call in a physician. Towards night, therefore, he went home in a carriage; but he could neither go up nor down stairs. This made it necessary for him to be carried by two of his domestics, who were greatly surprised at the unusual weight of his body. The patient being at length put to bed, the physician and surgeon again set about carefully inspecting the leg: but

could discover no injury in it. They suspected, therefore, that this pain was the forerunner of an erysipelas. But as the pain seemed aggravated, to alleviate it, they recommended the application of an emollient cataplasm. At four

Erysipelas suspected to be present.

o'clock, instead of supper, he took some weak soup. After which

the pain became so excruciating, that the cataplasm, which occasioned much uneasiness, was removed. Still it continued with equal violence, after

A restless night from increased pain and fever.

the cataplasm had been taken away. In the mean time excessive thirst came on. The urine came off red, and as it were bloody. Almost the whole night was passed without sleep, for it was not until ten o'clock, or a little before the ensuing morning, that the patient began to slumber.

225. Next morning, as the fever by no means remitted, the excruciating pain continued, the whole calf was swelled and hard, the erysipelas that had

Very hard swelling of the whole leg.

been suspected did not appear, and the pulse was found to be great, strong, and hard; the physician, after having caused an injection to be administered to cleanse

Blood let.

the intestines, thought proper to draw blood from the arm. Ten ounces were taken accordingly, and the blood not only adhered firmly, but shewed the inflammatory, or pleuritic coat, as it is called, very thick and conspicuous. About mid-

day another surgeon, of much learning and experience, was called to examine the leg, and pronounce his opinion concerning the nature of the complaint. He perceived none of that external redness which occurs in erysipelas, as he afterwards informed me; on the contrary, he found the joint of the foot, tendo Achillis, and muscles of the calf, prodigiously swelled, tense, and hard; which never happens in erysipelas, as being merely a disease of the skin. He, therefore, supposed it be some other kind of disease; and since the patient's father had been subject to gouty affections, and for a few days past there had been symptoms of a kind of rheumatic pain about the neck and shoulders, he concluded that there was something of gout in the case. On which account he advised the leg to be fomented with an emollient and dissolving decoction, in which venice-soap had been dissolved; which was immediately done.

The gout suspected to be present.

226. At the twenty-first hour of the same day, he was seized with an universal chilliness, his pulse being low and small. An exacerbation was then supposed to take place; but, at the twenty-third hour, the pulse continued equally low, which seemed to be rather the effect of the failing of nature, than of a new accession of the fever. The pain of the leg was somewhat diminished, and the tension softened; but the colour appeared doubt-

ful. For to some it seemed rather livid, while to others, and those not unskilful, it appeared otherwise. If any change, therefore, had happened in the colour, it was scarcely discernible, and admitted of doubt. At the fourth hour, in the evening, a certain degree of alienation of mind took place, and he began to grow somewhat outrageous, attempting to leap out of bed, becoming anxious, restless, and panting. The pulse, which during those symptoms had remained small, obscure, and unequal, now became much more frequent. At the tenth hour, towards morning, all the symptoms became worse; and such was the weakness of the pulse that it could scarcely be felt. At that time the colour of the leg, which was evidently more livid, the unfrequent, anxious, and difficult respiration, the derangement of mind, and frequent hiccup, announced the near approach of death. For shortly afterwards he became void of sense, without pulse, and stupid, and at length, after struggling with death to the thirteenth hour, he expired, towards the close of the second day from the commencement of the pain, or forty hours from the manifest accession of the fever and increased pain of the leg. While he still lived, as I have heard from an ingenious physician who was present on the melancholy occasion, his whole leg from the foot to the hip-joint appeared evidently marked longitudinally with black

Black colour of
the leg.

and livid streaks. I have delivered the entire history of this case, on the testimony of those who attended the unfortunate patient, as I myself, on account of being engaged on business elsewhere, could not attend.

227. So very sudden and unexpected a death was matter of wonder to every one; and gave rise to a controversy among the physicians and surgeons who had been called in; some contending that it proceeded from a malignant erysipelas, which had quickly run into gangrene; while others asserted that it ought to be ascribed to a very acrid arthritic humour, which had probably been at last forced from its seat towards the internal parts of the system. Nor could it be easily determined to whose opinion assent should be given. For the rosy colour peculiar to erysipelas was not present, and it was not the skin, in which that disease is situate, but the internal and muscular parts, which were affected with pain, and swollen; and if any gangrene ensued, as the black colour of the skin seen latterly indicated, it did not seem to have proceeded from the erysipelas, of which no symptom, or at least a very equivocal one, had been discovered. Moreover, such may sometimes be the malignity of the arthritic humour, that a great many, and fatal symptoms, nay,

Whether it may not have been a malignant erysipelas?

Whether it was a metastasis of the arthritic humour?

actual death, have been very often observed to be induced by it. I myself have known instances of gangrene and sphacelus having been occasioned by such a cause. But the patient in question had never before laboured under gout, nor in his case were the joints alone, but the calf of the leg, particularly affected; nor, when gangrene succeeds to arthritic pains, does it usually supervene so rapidly. But what must we think of the metastasis of the arthritic humour? Without doubt the hard swelling became less, and the pain milder, towards the evening of the second day. Should that be considered as a symptom of metastasis? But it is likewise in common to incipient gangrene. If the swelling and pain, however, subsided in consequence of the principal part of the arthritic matter retiring from thence, why did the leg become black and gangrenous?

228. The melancholy under which the patient long laboured might excite the suspicion of black bile being accumulated in the abdominal viscera, and at length being suddenly thrown into motion, and carried to different parts of the system. It is a certain fact, that black bile, like a corroding and destructive poison, sometimes acquires such acrimony as readily to occasion the very worst fevers and mortifications of the parts to which

Whether the disease arose from black bile?

it is carried. But in the present instance, to my certain knowledge, no symptom of the atrabilarious colour or habit, no taint of the abdominal viscera, nor sign of blood stagnating in them, no flatus, rumbling, nor vitiation of the other functions in the lower part of the belly, had preceded.

229. Whether the complaint, therefore, be derived from a latent and *anomalous* arthritic humour, or from an *erysi-*

The etiology.

pelatous or *atrabilarious* one, I shall always agree with Galen and Mercurialis in believing, that the humour which was gradually generated in the patient's system, and when suddenly evolved occasioned such pernicious consequences, was of a poisonous kind. For, according to Galen, on its breaking forth it might not only have excited the fever, if the fever came on at the beginning of the complaint,—which in this patient does not to a certainty appear to have happened;—but being forced by the vital powers partly to the foot, it occasioned the pain, swelling, and gangrene; and partly to the brain, lungs, and præcordia, gave rise to the delirium, anxiety, difficult respiration, and finally put a period to life. But if it be supposed, with Mercurialis, that the malignant humour was both generated and evolved in the foot, it is evident in that case, that the pain and swelling must have necessarily appeared first in

that part along with the fever, as has already been related, and lastly gangrene of the foot itself. It is likewise easy to understand why, as soon as the deleterious and putrid poison was absorbed into the veins, the functions of the heart, breast, brain, and nerves, were quickly injured, nay, altogether suppressed with life itself. Either one or other explanation may be adopted, according as the fever has preceded the pain, or succeeded to it, or, what amounts to the same thing, according as the fever seems primary or secondary ; although the fever and pain may sometimes be so synchronous as not to admit of such a distinction ; and then it may be considered as primary.

THE CURE.

230. In a case, therefore, of such danger, a disease so rapid in its fatal termination, it is a difficult matter to check its progress. The poison so inimical to the vital and animal functions, and so destructive to the irritability and sensibility, contaminating every part so quickly, seems to require something either to correct or evacuate it, and, at the same time, to mitigate the severity of the symptoms. The correction of it is scarcely to be expected, since we are neither acquainted with the peculiar na-

The indications.

ture of the poison, nor possess any remedy by means of which it may be blunted or changed. It will be better, therefore, with all possible dispatch, to attempt evacuating it. Galen and Mercurialis propose immediate bleeding; which seems to be required both by the degree of pain endangering inflammation, and by the violence of the fever. But very great caution is requisite in the case of a poisonous and malignant humour, so inimical to the vital powers, and so apt to induce gangrene or putrefaction. If, therefore, plethora, the patient's age, habit of body, pulse, the violence of the fever, acute pain, &c. indicate it, blood should be drawn immediately, before putrescency prevails, but cautiously and sparingly. But when the indication for this remedy is doubtful, cupping-glasses are thought to be safer. Next, if it be suspected that there is any collu-

Bleeding.

vies in the *primæ viæ*, it should be thrown off by some gentle cathartic or pretty strong clyster. But the part which is swelled, painful, and tense, especially if it be warm and red, should be treated with leeches, in some measure to produce detumescence. If these be insufficient, a number of deep incisions must be made to procure an outlet

Cupping glasses.

for the poison, and prevent the risk of gangrene supervening. But if, as in the case of Crito,

Leeches.

black pustules have already taken place on the foot, and the diminution of pain and swelling, and change of colour, shew that mortification has commenced, and the scarifications prove of no advantage, Mercurialis supposes that then the

only hope of recovery rests in amputation. When, however, this

cruel resource cannot be avoided, it must be done as quickly as possible, before the gangrenous humour has infected the whole body; in which case it would be absolutely useless.

231. While these things are attended to; the poison, of whatever kind it be, must

What alexipharmacs are proper? be mitigated and expelled from the body with as much care and dispatch as possible, and its fatal effects prevented.

It is proper, therefore, early in the disease to have recourse to the most efficacious alexipharmacs and antiseptics, and particularly such as call forth sweat. Among those a conspicuous place is held by camphor, Virginian snake-root, contrayerva, polygala, Peruvian bark, elixir of vitriol, spiritus Mindereri, in various forms, and sufficiently strong, but given at different times.

It is proper also to employ volatile remedies, as volatile salt of hartshorn, vipers, amber, and that celebrated composition consisting of spirit of sal ammoniac pre-

Volatile remedies.

pared with lime, and oil of amber intimately mixed, which has its name from Lucius. It is of great advantage to assist and complete their operation by means of copious, frequent, temperate, and antiphlogistic drink, or such as is subacid, aperient, and, if not warm, at least lukewarm. I consider it also as of the utmost advantage at the very beginning of the disease, especially if the strength be much reduced, to bring to the external parts the force of the disease by means of cantharides applied to the arms and thighs. But those remedies which repress or discuss, on account of endangering a metastasis, are hurtful to the part affected. It is proper, therefore, to guard well against these. For alleviating the pain, tension and spasm, then, milk and water, lukewarm, will be sufficient, sponges or rags dipt in which should be applied, and now and then renewed. The shortness of the time, and the very acute nature of the complaint, even prevent the physician from devising other means of relief, far more from putting them into practice.

EPHEMERA FROM CONTAGION, OR PUTRID MIASMA.

232. On the first of May 1780, as I was just about publishing these observations, I fortunately received a letter from my very learned friend,

D d 2

Reinlein, professor of the practice of physic, and physician in ordinary to the Military Hospital at Vienna. In which, after giving me an account of

The putrid fever
which was so
fatal to the sol-
diery.

a very putrid fever, which proved extremely fatal to the soldiery, and which he himself could not escape, he pro-

ceeds to communicate the case of a malignant ephamera, which suddenly arose from a pestilential *miasma*, or *contagion*, (219.), accompanied with uncommonly terrible symptoms. I shall transcribe the words in which he has delivered this very melancholy account. “ The disease which proved so fatal to the soldiery, both in its symptoms and termination, was the same which authors denominate *putrid*; the dejection of the foreign soldiers increased the danger, with the addition of nostalgia; and many were cut off by the disease returning. Daily experience convinced me of the remarkable antiseptic virtue of an infusion of the *arnica* flowers, to which, perhaps, I am indebted for my own life, as I could bear neither bark, camphor, nor mineral acids. Nor must I omit to mention the formidable effect produced by the contagion upon several of the soldiers appointed to wait upon the sick. All of them stout hale fellows, (like so many Herculeses), were attacked at the same time; their

“ face became of a bluish yellow ;
 “ their eyes were like those of a per-
 “ son half dead, sunk in the sockets ;
 “ their nose and forehead became
 “ sharp, and their skin rigid ; their superior and
 “ inferior extremities were at first pale, a little
 “ after they became cold, and successively livid
 “ and black ; the pulse was very weak ; the re-
 “ spiration extremely anxious ; there was a con-
 “ stant vomiting of a green, rust-coloured, fetid
 “ matter ; the tongue was moist, tremulous, and
 “ foul ; some thirst, the belly bound, and when
 “ excited by injections, green, cadaverous stools
 “ took place ; the hypochondres were tense, and
 “ there was the greatest dejection of spirits. To-
 “ wards the end of the third, fourth, or even
 “ sixth day, during the greatest anxiety and fre-
 “ quent fainting, death came on. A surgeon’s
 “ daughter, of about sixteen years of age, strong
 “ and healthy, being extremely desirous of view-
 “ ing the dead bodies, frequently used to enter
 “ the place where they were kept until they were
 “ interred. One day, as she was returning from
 “ this place, she was suddenly seized, as it were,
 “ with intoxication, and, on arriving at her
 “ chamber, she immediately became first cold,
 “ then hot, with a febrile pulse, and began to
 “ vomit a greenish, rust-coloured matter ; shortly
 “ afterwards she became speechless, and was at-

The symptoms.
 with which the
 attendants were
 attacked.

“ tacked first with slight, then enormous convul-
 “ sions over the whole body. Whatever was put
 “ into her mouth, she either did not swallow,
 “ or rejected it; likewise, injections immediately
 “ came off. The blood, when drawn, shewed
 “ no faulty condition, except unusual density.
 “ Twenty-four hours afterwards I was called in,
 “ when she had altogether the cadaverous ap-
 “ pearance; the pulse was scarcely perceptible,
 “ her lower jaw was affected with tetanus, there
 “ were constant convulsions, and involuntary stools
 “ emitting a cadaverous smell. I immediately
 “ ordered leeches to be applied to the temporal
 “ arteries, and behind the ears, which drew off
 “ a few ounces of blood. Injections of chamo-
 “ milla, with a pretty large dose of camphor,
 “ were repeatedly administered. Likewise, fo-
 “ mentations of the same kind were applied to
 “ the abdomen; and blisters to the nape of the
 “ neck and lower extremities. To relax the tetanus
 “ of the under-jaw, the most emollient poultices
 “ were employed, mixed with camphor and am-
 “ ber, but all to no purpose. She
 “ expired on the thirty-sixth hour
 “ from the commencement of the complaint.
 “ Many of the surgeons and attend-
 “ ants, on being sensible of the un-
 “ usual debility which was the fore-
 “ runner of the disorder, immediate-

Death.

How those infect-
ed with the
contagion were
treated.

“ ly applied for advice. On taking an emetic, a
“ viscid, sometimes a bilious, matter was thrown
“ off, and afterwards employing the sp. Minde-
“ reri, with an infusion of the arnica flowers, a
“ copious sweat took place, and they thus esca-
“ ped the danger.” So far Reinlein proceeds.
To this malignant ephemera may be referred,
the first kind of pestilential disorder that occa-
sioned such havock at Marseilles, in the year 1720,
arising from a very noxious and deadly conta-
gion. The persons affected with it were at-
tacked with inordinate shivering, accompanied
with a small, soft, slow pulse, or a quick, irregular,
contracted, or depressed one. But such was the
heaviness of the head, that patients could scarcely
raise it, at the same time becoming stupified and
confused, as if they had been intoxicated. Their
downcast looks, and the dulness of their eyes,
indicated their terror and despondency. More-
over, they spoke with a slow, abrupt, and que-
rulous voice; their tongue was almost always
white, at last it became dry and reddish; their
face was pale, lead-coloured, thin, cadaverous;
there were very frequent fainting-fits, extreme
anxiety and prostration of strength, deep sleep,
nausea, and vomiting. Those who were thus
affected, were generally carried off in the space
of a few hours, or one night or day, or at far-
thest in two or three days; their strength being

reduced to the lowest possible ebb, or sinking under the violence of the tremors or convulsive motions, without any external tumour or eruption appearing *.

* Murator. Relazion. della Peste di Marfiglia, p. 4. Likewise, the description given by the physicians of Montpellier, Chicoyneau, VERNY, and Soullier.

233. When once, therefore, the putrid contagion or miasma, has got into the
 Cure. body, and has affected the whole nervous system, we ought to endeavour, as soon as possible, to evacuate the infected salivary, or gastric fluid, in the most expeditious manner; and to eliminate, by the pores, whatever of the poison has entered more intimately into the system, and to correct it by means of antiseptics. Hence the cure, which is employed in poisonous and contagious diseases, applies likewise to the present. After employing bland emetics, and, in the case of great plethora, bleeding, we must hasten to exhibit sudorifics, antiseptics, and gentle sedatives, such as *sp. Mindereri*, *acetum Bezoarticum*, *aqua Theriacalis*, *aqua Lucii*, *Theriac*, *Diascordium Fracastorii*, *Mithridate*, citron-juice diluted with water, decoctions of *contrayerva* root, *Virginian snake-root*, *arnica*, *lime-tree flowers*, *balm*, *elder-berry*, *camphor*, *musk*, &c. as circumstances, the patient's age, sex, and the time of year, may require. Nor is it impro-

per to have recourse to révellent remedies, as they are called, as catharides applied, as is usual, to the skin to excite blistering, cupping-glasses, scarification, friction, pediluvium, and sweating ; as Reinlein found useful (232) in quickly expelling the poisonous effluvia from the bodies of the attendants of the sick. In the pestilential ephemera of Marseilles, (232.), as readily appears from its history, there was no room for blood-letting. And whoever happened to be bled, shortly afterwards died. Emetics and cathartics were also tried in vain ; nay, they even accelerated the patient's death. Nor was any advantage derived from cordials and sudorifics, to which the more prudent part of the faculty had recourse ; except, perhaps, that they sometimes prolonged the patient's life for a short while. So stubborn and difficult to be overcome did this contagion prove.

THE SYNOCHUS SIMPLEX *, OR SYNOCHA.

234. The *synochus simplex*, or *synocha*, as it is called by others, is very similar to the *ephemera extensa*, but somewhat more severe, and of longer duration. It is therefore classed among the ephemeræ by Galen. The shortest of them is generally finished in four days, the longest in

The *synochus simplex*, very like the *ephemera extensa*.

The genuine and
extended syno-
cha.

seven. It is supposed by some †, that the former, for distinction, should be named *legitima*, and the latter *extensa*, as in the *ephemera*. Each of them

Why called im-
putris?

is named *synochus imputris*, to distinguish them from another kind of fever, universally called *synochus putris* ‡.

For Galen, and the ancients who adopted his opinion, thought no fluid became putrid. Hence

Why called
simplex?

it was named by others *synochus simplex*. But although this fever appears to be of the continent kind,

three varieties are attributed to it by the ancients, from the difference of its progress. The

Three distinctions
of it.

first is the *homotona*, or *acmaestica*, or that which from beginning to end observes nearly the same degree: the second is the *epacmaestica*, or *anabatica*, which gradually increases from the commencement, until it remits and ceases: lastly, the third is the *paracmaestica*, which, after the first accession, which is very severe, gradually and imperceptibly decreases to the end. To many, however, these distinctions seem to be merely fictitious.

Whether these
distinctions be
fictitious?

For my part, I would not altogether reject them as fictitious, knowing by experience, that there is great variety in the manner in which this fever proceeds, and since there is no reason why the

cause exciting the disease should not continue for some time at the same degree, until it be subdued; or why it should not be in some measure successively evolved, and increase the febrile motion, until it become less, and pass out of the system; or be imperceptibly diminished, so as at length wholly to disappear in a stated time. For frequently after one or two days the fever remits, although, like other continent fevers, it be somewhat aggravated towards evening, but is less so daily, till it cease altogether. It is peculiar, however, to this fever to arise from manifest causes, to have the nature of a continent fever, and to terminate within seven, or, at most, nine days.

* *Synonyms.* Synochus imputris Galeni, diff. febr. l. 2. Synochus simplex Riverii, prax. med. l. xvii. sect. i. c. 2. Continens non putrida Lommii, observ. med. p. 2. Synocha simplex Junkeri, Tab. 58. Febris continens, sive synocha Stahlii, Casual. min. cas. 87. Synocha Sauvagesii, Nosol. Meth. cl. 2. genus 2. Febris synocha Valcarhengii, De præcip. febr. § xxiii. Febris acuta simplex Störckii, ann. med. 2. mens. Jul. 1759. Febris continua simplex Lieutaudii, synop. l. 1. sect. 1. Febris continua depuratoria, sive defœcatoria, Quesnæi, Traité des fevr. contin. T. 2. p. 354. Continens inflammatoria simplex Sellii, Pyretolog. method. rudim. p. 103. The ephamera plurium dierum of some authors. The febris continens, or homotona, likewise the septimanaria of others. And this is by no means the sum total of the synonyms. For such unbounded license of inventing names is now tolerated, that, unless it be checked, their number will at length be so

much extended, as to require very great retention of memory, and much time merely to learn them, without being attended with almost any advantage. Hence I have thought fit to retain the names adopted by the ancients, and which have been used by authors for several ages, although they be sometimes improperly employed. For new names, however better adapted in general they may be, often favour of barbarity, or beget confusion, and are the occasion of such as read the works of the ancients, not understanding with what terms formerly in use those lately adopted correspond, or make them mistake one disease for another.

† Valsareng. l. c.

‡ Galen, l. c. who called all fevers *putrid*, except the *ephemera*, (among which he likewise placed this *synochus*), and *bestic*, as was mentioned above, when we treated of the division of fevers.

C A U S E S.

235. It is to be ascribed to the same causes as the *ephemera* (200), but such as act more powerfully, or are more severe, and affect a habit, which, though it be not in a bad condition, is of the plethoric or choleric kind, or otherwise disposed to effervesce. Hence its symptoms nearly correspond with those of the *ephemera*, with this only difference, that the *ephemera*, as has already been observed, comes on suddenly, and, if it exceeds twenty-four hours, shortly becomes milder and remits, nor does the heat continue so intense as it was at first. While the *synochus* comes on more slowly, and, as it

were, step by step, increasing daily to the fourth day, after which, if it is to continue to the seventh, it gradually decreases and terminates. It rarely happens that it continues at the same degree until it wholly subside. But if it is resolved on the fourth day, all these phenomena, as appears, take place sooner. Since, however, the same causes are in common to each fever, namely, the ephamera and synochus simplex, but act, in some measure, more powerfully and durably than in synochus; the same symptoms, but in the latter more violent, must necessarily take place in both. Whence it has happened, that this synochus is considered by some of both the ancients and moderns, as a more intense degree of ephamera, or, as it were, a prolongation of it.

236. Besides the distinctions of the synochus already enumerated, (234.), others arise from the diversity of causes Other distinctions of it. producing the complaint. Thus one is *sanguineous*, or *pletboric* *, another *choleric*, or *ardens sine periodo* †, and so on, as has been said of the ephamera; it may likewise be *primary*, *symptomatic*, *secondary*, *sporadic*, and *epidemic*, like other diseases, and may be still farther variously subdivided according to circumstances. To this kind of fever is usually referred the *putrid synochus* of Sennert ‡, although under this term he

has expressed not the simple *synocha*, but the truly *putrid synochus*, of which I shall hereafter treat. I am far from contending, however, that every degree of putrescency or malignity is at all times absent from *synocha*. Why may it not be likewise putrid and malignant? Here several other species may very properly be passed over; as the *scorbutic* species of Linden ||, the *catarrhal* of Hoffman, Henisch, and Riverius §, the *tragada* of Rammazzini **, and others mentioned by Sauvages ††, as belonging to other diseases, namely, remitting and intermitting fevers, not to *synochi*, or continent fevers.

* *Synonyms.* *Synocha plethorica*; *synocha sept. die soluta* Frid. Hoffman. de febr. sect. 2. cap. 1. and observ. 4. Sp. 1. Sauvag. Nosol. class. 2. gen. 11. *Febris sanguinis* Avicen. T. 2. p. 43. *Synocha simplex* Frid. Hoffman. de febr. p. 110. *Synocha sine putredine* Sennerti, de febr. l. 1. c. 6. and l. 2. c. 10. *Febris inflativa* Heurnii, Sauvag. l. c.

† *Synonyms.* *Synocha ardens*. sp. 2. Sauvag. *Synocha biliosa* Sennert. De febr. l. 2. c. 10. *Synocha caufodes* Mangeti Biblioth. Med. *Synochus caufonides* Gilberti Angli. fol. 56. *Choleric febris* Frid. Hoffman. de febr. sect. 2. c. 2. obs. 5. *Synocha biliosa* Fernellii, Sennert. l. 1. c. 6.

‡ De febr. l. c. 2. xi. Sennert is of opinion that it generally arises from checked perspiration, and blood, according to the old way of speaking, stagnating in the veins, becoming putrid, or rather slightly inflamed. For according to them, putrid blood is the same as inflammatory, as will afterwards appear. For of all *putrid* fevers, (not *synochæ*, as is erroneously supposed, for, according to the ancients, as has already been

shewn, (58.), there were many other kinds of putrid fevers), he calls it the most *simple*, and *most easily to be cured*. He considers it as twofold, one *pure* and *genuine*, the other *bastard* and *spurious*. That the former rarely exceeds the seventh day, the latter is extended even to the fourteenth, and that critical symptoms appear in it. It is, therefore, entirely referable to the *putrid synochi*, or, if it be supposed to come under the head of the *synochus simplex*, it will not differ from the *synocha sanguinea*, or *plethorica*.

|| On consulting the description of the *synochus scorbutica* given by Sauvages, it will readily appear, that it was either symptomatic, or combined with scurvy, or, on account of the contagion being received from scorbutic parents, that it had differed from the nature of simple synochus, and had occasioned death on the seventh day in consequence of actual corruption of the blood.

§ Sauvages considered as one and the same fever the *synochia catarrhalis* of Hoffman, together with the *catarrhus epidemicus* of Henisch, and with the epidemic fever of an anonymous writer in Riverius, among the *observat. addit. obs. x.* and with the *catarrhus* of Riverius, cent. 1. obs. x. But, as far as I can judge, these diseases differ not a little from one another, and in particular very widely from the *synochus simplex*. Let their individual descriptions be compared together. A description of the epidemic fever, called by Hoffman, in the year 1729, *synocha composita*, is to be found in the same book, de febr. sect. 2. c. 1. observ. v. If it be duly weighed, it will be found to have been a catarrh combined with a fever more or less severe, or if it be rather named a fever, whether its duration or type be considered, that it is by no means to be ranked among *continent fevers*. For frequently when the disease was more severe than usual, it was prolonged to the fourteenth day, which is altogether incompatible with the nature of the *synochus simplex*; besides it was aggravated in the evening, a

thing peculiar to *quotidian remittents*; to say nothing of the *milary* or *petechial* eruption, which sometimes appeared in it, and proved fatal. Lately a man, otherwise of profound learning, speaking of the catarrhal fever of Hoffman, has referred it to the class of remitting fevers. But I do not think that he paid sufficient attention to these words of Hoffman; catarrhal runnings, *which were aggravated towards evening, occasioned increase of heat and a restless night, until generally on the fourteenth day they altogether disappeared.* It was, therefore, with propriety that I referred that fever to the remittents, because of its being aggravated in the evening, and a restless night attending it. But the *epidemic synochus* of Henisch, *accompanied with catarrh*, which prevailed in the year 1580, is described in the Commentary on Aretæus, p. 315. With respect to duration, indeed, it more nearly approaches to the *synocha*, for *generally it was protracted to the fourth day, sometimes, though rarely, to the seventh and ninth.* But no mention is there made of its being continent, and it is probable, since it was a catarrh, that it was aggravated in the evening, and had remissions in the morning. If, therefore, it be at all referable to the class of fevers, it undoubtedly belongs to remittent, not continent fevers. Add to this, that Hoffman's description differs not a little from that of Henisch, and that it, therefore, does not embrace one and the same species of fever. There is a greater similitude between the disease of Henisch and the *epidemic fever* of the year 1580, described by the anonymous writer in Riverius; although his description somewhat differs from that of Henisch, and is neither so accurate nor perfect as to lead to any certain conclusion concerning the specific nature of the disease. This only is certain, that each disease was an epidemic catarrh more or less malignant and fatal. Lastly, the catarrh, with other symptoms described by Riverius, (cent. 1. obs. x.) was unaccompanied with fever, and therefore by no means ought to be confounded with those already mentioned.

** Rammazini (constit. epid. urban. A. 1591.), has de-

scribed such fevers as are chiefly produced by summer heat. "But those were tertian intermittents, and generally of the exquisite kind, which were terminated after one or two bleedings, on the seventh day, or even sooner, by a critical sweat." (§ 34.). In the following paragraph he commemorates the species called *tragada*, which prevailed among the inhabitants of Abdera, from Lucian, not because the fever, which he had observed in Modena, was of the species called *tragada*, but to shew that excessive heat had been the cause of it, and might, therefore, be the cause of the fevers then prevailing, "which were terrible to behold, and not unaccompanied with mental emotion, but were afterwards resolved on the seventh day, when a sweat had broken out, after the employment of copious blood-letting." That fever, therefore, of Rammazini was a tertian intermittent, probably conjoined with an inflammatory diathesis, or plethora, and heat, having no affinity to the Synochi. It is proper also to pass over the seventh species, namely, the *synocha dolorum*, and the eighth, or *synocha cephalalgica* of Razoux, which Sauvages mentions; for the fever accompanying the pains and phlogoses of wounds, burns, phlegmons, suppurating buboes, punctured tendons, gout, rheumatism, nephralgia, proctalgia from piles, and other diseases, is never continent, but subject to exacerbations, and unequal in its course, sometimes likewise intermitting; and is on that account improperly ranked among the Synochi. Nor is the fever arising from the rending head-ach occasioned by worms in the frontal sinus so described by Razoux as to deserve being reckoned a synocha. For in the history of it, (*Journal de Medicin*. T. ix. p. 415.), nothing has been said of its type, nor of the time when it ceased. Why then should it be called a *synocha symptomatica*, since Razoux himself gave it no particular denomination?

** Nosol. l. c.

237. But it is of great consequence to ascertain

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whether the synochus (234) be *simple, pure,* and *true,* or *impure, anomalous,* and *complicated.* For on this depend not only the symptoms and manner in which it proceeds, but also the method of cure itself. Simple and pure synocha generally begins without cold, or shaking. The whole body grows sluggish, and seems worn out with a certain feeling of lassitude, or bruised, and is warm. More manifest sweat succeeds.

Symptoms of the
first.

There is either pain or heaviness of the head. Deep sleep occurs; violent throbbing of the temporal arteries; great and somewhat difficult respiration; a full, violent, quick and rapid pulse, but equal and soft, excepting in that case in which the *primæ viæ* abound with vitiated fluids, or are infested with worms. For then, before being ejected, they excite spasms, by which the pulse is rendered small, somewhat hard and unequal. In such a case, the complaint is complicated. The urine generally differs little from what it is in its natural state. At the beginning, however, it is for the most part watery, becoming gradually reddish, or white, thick, and turbid, especially when the fever arrives at the third or fourth day. But the moisture of the skin, which we have already observed appears early, is imperceptibly so much increased, that as the disease abates, or at each

remission, it passes into a copious sweat. Sometimes also, if the patient be plethoric, or young, either on the fourth or seventh day, an hemorrhage from the nose has been known to break out, thus putting a period to the fever. At times likewise the insensible perspiration alone produces the same effect. Nor is it uncommon for the disease to be brought to a favourable resolution by a looseness coming on*.

* The simple synochus treated by Störck, in the month of July 1759, (Ann. Med. Secund.), is thus described by him under the name of *simple acute fever*: “ Its symptoms were
 “ slight; there was but a small degree of head-ach, moderate
 “ thirst, a slight dry cough, and very mild fever. The tongue
 “ was generally white, the eyes lively, seldom dull, the respiration almost natural, and the skin soft. The stools were of
 “ a proper consistence and colour, and were passed almost every
 “ day spontaneously. The urine at first was dark-coloured;
 “ at the close of the third day, turbid, and on the fourth day
 “ it deposited a copious white, glutinous sediment, as happens commonly in gravel. Very frequently upon the fourth
 “ day arose a copious and universal-sweat, and the fever then
 “ ceased, while the urine gradually recovered its natural condition. But if, on the fourth day, no sweat was observed,
 “ the urine then continued to deposit a thick sediment, and,
 “ upon the seventh day, without any sensible evacuation, the patients were freed from the fever, and in a short time recovered
 “ their strength. Beyond the seventh day the *simple acute fever* (*synocha*) never lasted. During this month there were
 “ only three patients in whom on the seventh day the white
 “ miliar eruption broke out. Yet even in them the fever
 “ ceased on the same day; their strength began to return, their

"appetite became good, and every function recovered its prime vigour." It may be observed, however, that on the preceding month miliary eruptions were the principal, or stationary disease; and as the prevailing disease always imparts something of its disposition to such diseases as happen to break out during its prevalence, or causes succeeding diseases to retain something of those which have preceded them, it is not surprising, if sometimes in this species of synochus, a miliary eruption took place, of a benign and salutary kind; although in general it be unconnected with synochus.

238. Such are the phenomena usually occurring in the simple and pure synochus. But there are certain marks peculiar to each. In the *sanguineous* species, which most commonly attacks the young, and men of a plethoric habit, and accustomed to evacuations of blood, at any time of the year, but particularly spring or summer; all the symptoms are attended with greater violence. Frequently the blood rushing in great quantity into the head, fauces, breast, or abdominal viscera, occasions congestions as it were; hence symptoms of those parts being particularly affected manifest themselves, as swollen, flushed face, remarkable redness and watering of the eyes, severe head-ach, throbbing of the temples, vertigo, deep sleep, and sometimes mental derangement; some difficulty of swallowing at the fauces; thirst and dryness of the tongue. If the lungs and breast are particularly affected, shortly

Symptoms of the
sanguineous
kind, according
to Hoffman.

there supervenes straitening of the chest, difficult and frequent respiration, anxiety, palpitation of the heart, loss of strength, and dejection of spirits. But if the vessels of the stomach are too full of blood, nausea, vomiting, or a desire to vomit, and sometimes hiccup supervene. A similar congestion in the coats of the intestines causes most troublesome inflations, binding of the belly, or looseness attended with fetor; in the mesenteric arteries, or branches of the *vena portarum*, a fixed pain about the first lumbar vertebra, unusual sleeping, tossing, and, if the medulla spinalis be affected, torpor and weakness of the joints, or even convulsions, according to Hoffman *, who, by the way, seems to have entertained many notions from pre-conceived opinions. Be that as it may, the *sanguineous* species is indicated by the sanguineous temperament and symptoms of plethora.

* De febr. sect. 2. cap. 1.

239. In the *synocha choleric*, or *ardens sine periodo* (236.) which is occasioned by the causes (235.) acting on a Symptoms of the choleric species. bilious, or a warm and dry habit, otherwise in good health, no symptoms of putrefaction, according to the ancients, are discoverable in the pulse or urine, but a sharp kind of

E e 3

heat on the dry skin is perceived by another person ; there is a bitter taste in the mouth, loss of appetite, and the thirst, watching, and head-ach are more severe. To these Hoffman has added anxiety, internal heat, frequent stools, exhausting the strength, and inducing a kind of fainting *. But the principal, and as it were pathognomonic symptoms, are the ardent heat and excessive thirst †. For in these is supposed to consist the nature of all ardent fevers. But it is distinguished from the *periodical ardent fever*, or that *with a period*, which belongs to the intermitting or remitting fevers, because it has no manifest and certain accessions and remissions. Fernelius and others are of opinion, that in such a synocha there is an unusual effervescence of bile, and that fever is thus excited. But we are told by Sennert ‡, that Fernelius's opinion, if it be at all admissible, does not imply that the true hepatic, or *excrementitious* bile, should be considered as the cause of this fever, but the finer, warmer, and more acrid part of the blood, to which also the name of bile was applied by the ancients ; or, what amounts to the same thing, the blood itself, which in choleric habits is finer, warmer and more acrid, being thrown into a state of effervescence by an evident cause.

* I suspect that Hoffman in this instance labours under a mistake ; for these symptoms occur when it arises from a bi-

hous colluvies in the *prime vie*. Then the fever is indeed bilious, but not continent, nor is it of the species called homotona, but is periodically aggravated, and remits, so that it fairly belongs to the class of remittents, as all the *gastric fevers* do. But if ever in the bilious synocha humours, vitiated either in quantity or quality, load the *prime vie*, these must not be considered as the cause, but as the effect of the fever, or, as some complication of fordes in the stomach, are conjoined with the fever, so that by their excretion the disease is only diminished.

† Galen, 2. de method. cap. 1. et 9. c. 3. et 15. de diff. feb. 2. cap. 2. et de cris. 2. cap. 6.

‡ L. c.

240. On the whole, any variety is occasioned either by the temperament, or age, or by a bad state of the fluids, or the condition of the atmosphere, or the time of the year, or the combination of several causes; to which if attention be paid, the novelty or diversity of the symptoms and accidental circumstances, will by no means stagger the practitioner, nor lead him into mistake. For he will easily perceive what ought to be attributed to each cause or combination, what is peculiar or foreign to the disease, and what accessory. It is of great moment, however, to know what diseases have preceded, what condition of the blood prevails, and what diseases are most general at the time: for then all sporadic, or intervening fevers, and

Whence the variety of symptoms?

simple synocha itself, in some measure acquire the nature, and put on the appearance, of the prevailing diseases; whence it happens, that their symptoms do not a little differ, or that, besides the marks peculiar to the complaint, foreign and unusual ones are conjoined with them. Thus the synochus is accompanied sometimes with a cough, sometimes a diarrhæa, pain of the side, petechiæ, the miliary eruption, or other such complaints, so as to resemble the appearance of a *catarrhal*, *inflammatory*, *gastric*, *petechial*, or *miliary* affection. This, I suppose, is what authors mean by taking notice of synochæ being sometimes combined with *peticulæ*, or the *miliary* eruption, or other diseases. And in this sense it may likewise be called *putrid*, or *malignant*.

241. But simple synochus is discriminated from what they call *putrid synochus*, by the latter being of longer continuance, affecting patients with a greater complication of symptoms, and evidently and obstinately injuring all the functions, and its being truly *inflammatory*. Besides, as Quesnay * remarks, the putrid synochus begins with shivering, contracted, deep, unequal pulse, acrid, pungent and burning heat, thin, dark-coloured urine, sometimes watery, and pale, and continuing so for a long time. Likewise other fevers at the beginning generally excite great

Difference between synochus imputris, and putris.

thivering, or very long continued cold, but at the same time at first seem milder, then imperceptibly grow worse, until they reach their acme. On the contrary, the synocha imputris commences either with none at all, or at least very slight shivering, and shortly afterwards betrays itself by very severe symptoms; and, unless it be the *choleric species*, is generally accompanied with less acrid heat, which continues always at the same degree, and if it ever does remit, as we are informed by Sauvages on the authority of Stahl, the remission is of very short continuance. More-

over, it is generally indicated by a great and full pulse, unless when it is accidentally combined with vitiated chylication, as has already (237.) been mentioned, or any malignity lurks in it; for in the malignant kind the pulse is small, weak, low, and unequal, and is commonly attended with the most extreme lassitude. But malignity lurks in it, either because of its originating from a poisonous cause; or because the state of the atmosphere is such as to generate malignant diseases, and thus it comes itself in some degree to partake of them.

Combined with
malignity or
depraved dige-
stion.

* Des Fievr. contin. T. 2. p. 294. 295.

THE PROGNOSIS.

242. The simple synochus is generally salutary, because in its nature endeavours to free itself from superfluous fluids and useless excrementitious matter, by the sweat, urine, or other excretions, sometimes also by means of increased perspiration alone. Hence it is placed by Quesnay * among the *depuratoriæ*, or *defecatoriæ*, as he calls them; that is, among those fevers, which, as they arise from a cause easily passing through the outlets of the body, without the assistance of purulent concoction, are called by him *acritica*. If, however, the plethora be remarkable, or any considerable fault be committed either by the patient or physician, many bad consequences may be dreaded to result from excessive plethora, or violent motion of the blood. In particular, it is attended with more danger than an ephemera, and is more deadly in proportion to the greater density and impurity of the blood occasioning the plethora, or the more manifestly a scorbutic taint, or malignity, or any other vitiated complication, is conjoined with it. Nor is it wholly free of danger, when it assumes the nature of an *ardent* fever; for the internal parts are then very apt to be af-

It is generally free of danger.

When danger is denoted.

fectd with inflammation or gangrene, unless a proper plan of cure immediately be adopted, or, as Galen † informs us, it degenerates into hectic. Upon the whole, the *impure* and *malignant* species is more dangerous than the rest.

* L. c. T. 2. p. 354.

† De differ. febr. l. 1. c. viii.

THE CURE.

243. Frequently nature frees itself by the febrile motion alone. “For since,” as Sauvages* very judiciously observes, “the origin or cause of this fever is the blood, generally pure, but in great quantity, or loaded with the perspirable fluid, or abounding with igneous particles, or slightly inspissated by stagnation; in the first case, it is resolved by nature into the perspirable serum, by exciting the febrile motion; in the second, nature only attempts a constant secretion of serum; in the third, by means of the thirst requiring drink, it extinguishes the heat of the blood, and by dilating the urinary passages, and those of the perspiration, exhales the igneous particles; in the fourth, by means of increased heat, it diminishes the viscosity of the blood.” Valcarenghi †, therefore, with the greatest propriety, has ob-

The business generally to be intrusted to nature.

served, “ That a physician cannot do better than
 “ intrust the chief part of the cure to nature it-
 “ self, by removing such obstacles as may stand
 “ in the way, which may have the effect of alter-
 “ ing, or in some measure keeping off those use-
 “ ful motions ; but that bleeding is particularly
 “ necessary, in the case of plethoric patients, and
 “ principally when, on account of the excessive
 “ quantity of blood, and heat, the vessels become
 “ too turgid,” &c.

* Nos. Meth. cl. 2. ord. 1. Gen. 2.

† De præcep. febr. specim. practic. § xxiii. p. 139.

244. When, therefore, a full, great, and hard
 pulse, redness of the eyes, and pain or heaviness
 of the head, or deep sleep, or sup-
 pression of usual evacuations, dysp-
 nœa, or a threatening of congestion of the blood in
 any particular part, or its having already com-
 menced (238.), require that remedy ; a vein in
 the arm must be opened, and the bleeding should
 be repeated according to the duration of the
 symptoms, the age, temperament, and strength ;
 which, when great plethora or inflammatory dia-
 thesis is present, should be employed three or
 four times. But, in the *choleric spe-*
cies, blood-letting must be employed
 with greater caution, and merely to

Bleeding.

Less adapted to
 the choleric
 species.

allay the heat ; which, if in other respects it is indicated, may be effected by one or two bleedings. For the choleric diathesis neither requires, nor could bear large and repeated blood-letting. Likewise, to alleviate the headach, frequently cupping-glasses, with scarification, are advantageously applied to the neck and the shoulders. In boys, also, and young men, we should have recourse to bleeding ; but if, from any cause, a vein cannot be opened in them, and bleeding at the nose affords no relief, then leeches are conveniently applied to the neck and arms, which are particularly well calculated for children.

Leeches.

245. But if there is violent throbbing in the arteries of the head, if the face and eyes are swelled, and suffused with redness, the letting of blood proving of no service, or only a few drops of blood trickle from the nose, a freer flow of it should be excited, either by means of scarification of the inside of the nose, as used to be the practice of the Egyptians ; or by forcing a strong straw, or writing-pen, into the nostrils : for thus, in consequence of the copious flow of blood, the vessels of the brain are more immediately emptied, and inflammation of it, or delirium, are thus best prevented. In which

When and how
blood may be
let from the
nose.

case some (to pass over letting blood from the jugular veins, and opening the temporal arteries) advise the letting of blood from the sublingual veins: such a plan, however, by others is considered as not safe, from having sometimes seen, that the blood flowing from thence could not easily be stopped. But it does not appear, that if the bleeding be managed with caution, and there be no putrid dissolution present, it ought to occasion any apprehension. If by accident, however, too much blood continues to flow, it may be stemmed by means of linen rags doubled, and compressed with the finger, or by holding cold water in the mouth, or by employing styptics.

Opening of the
sublingual veins.

How to stop the
the bleeding
from the sublin-
gual veins.

246. After one or two bleedings, when the force of the fever is in some measure broken, we should inquire whether or not a vitiated state of the chyliification requires purging. Therefore, if any fault in the diet has preceded, if the tongue is whitish, if a bad taste of the mouth, weight at the stomach, nausea or vomiting, indicate the presence of fordes; immediately on the violence of the fever subsiding, the belly should be purged by the proper means. In what manner that should be done, by what means, and with what cautions, is pointed out in the

Bad chyli-
fication
requires
purging.

doctrine of General Therapeutics, and has already been repeatedly delivered. Neutral salts are found to be the most gentle purgatives. In the choleric synochus, those are preferred which gently purge the bile, and at the same time allay the heat of the blood, as tamarinds, cream of tartar, whey, and similar subacid substances, or such as are apt to become acid. There is seldom occasion to excite vomiting. But if purging is contra-indicated by any thing, or if it is not indicated at all, the belly must be kept open by clysters alone.

247. Moreover, to allay the heat, and attenuate the lentor of the fluids, by way of drink, the patient may be allowed either simple water, with the juice of lemons, citrons, oranges or currants, or emulsions of the cold seeds, or decoctions of barley, oats, or grass, adding to each draught a little pure nitre. If these are not to be procured, pure water may be acidulated with vinegar or oxymel. When great tenuity and rarity of the blood is suspected to be present, as happens in the *choleric* and *ardent* synocha, and the heat does not sufficiently yield to the remedies already proposed, it becomes necessary to add to the drink some vitriolic, sulphuric, or nitrous acid. Hoff-

Refrigerants.

Vegetable acids.

Fossil acids.

The drinking of
cold water.

man, embracing the doctrine of the ancients with regard to this particular, warmly recommends the copious use of cold water.

248. When the disease has now begun to abate, if the sweat does not flow spontaneously, or comes out with difficulty or imperfectly, it must be promoted by means of tepid or warm drink, especially dilutions of veronica, carduus benedictus, scordium, elder-flowers, those of lime-tree, and wild poppy, taken in large quantity. Nor, if they are preferred by any one, should common tea-leaves be excluded. Along with these, the diet should be spare, fluid, and refrigerant.

When sweat is to
be excited.

Panada and roasted apples may be given twice a-day. Flesh and rich soups should be altogether laid aside. So far concerning the cure of the simple and pure synocha. We shall now touch upon that of the more complicated and impure kind. If catarrh, pleurisy, diarrhæa, putrefaction, petechiæ, the miliary fever, or scurvy, are combined with it, it is the best plan to employ those remedies which are found serviceable in such complaints. In the case of a fetid corruption of the gums, or when a putrid dissolution of the blood is feared; after gentle purging, the progress of the complaint must immediately be stopped by antiseptics,

The kind of food.

especially vitriolic acid added to the drink in considerable quantity, port wine somewhat sour, Peruvian bark, vinegar, orange-juice, spiritus Mindereri, and other remedies, to prevent its cutting the patient off, as it usually does, by a premature death. The symptomatic species, if in fact there be any such, ought to be cured in the same manner as the primary complaint from whence it proceeds.

THE MALIGNANT SYNOCHA.

249. We have already not hesitated (236. 240.) to class among the varieties of this fever, the *malignant ephemera*. But to prevent others from objecting to this classification, we may adduce the authority first of Quesnay *, who has to a certainty determined, that the synochus imputris is sometimes conjoined with spasmodic *accidents* and symptoms, so as to seem putrid and *critical*, nay, *malignant*. Next, Storck seems to remove all doubt, mentioning, that, Two observations of Storck.

in the month of October 1758, when the miliary and petechial fevers (which had been very frequent for some months before) had not yet altogether ceased, several people had been attacked with *simple acute fever*, that is, the synochus imputris, with milder symptoms

than usual, and that in the majority of cases the mild regimen had been sufficient to remove it. Among the number, however, were two women "in whom unusual startings of the tendons over the whole body were observed from the very beginning of the disease. The other symptoms," as he himself proceeds to relate, "were very similar to those which denoted an eruption being about to break out; for the eyes were dull, the face red, the respiration difficult and unequal, accompanied with a slight cough, dry and not frequent; there was a sense of anxiety about the præcordia; the head and loins were affected with violent pain. Those startings of the tendons debilitated the patients at the very beginning of the disease, nor could they be moderated by any remedy, whether stimulant, prepared with camphor, opium, or by means of the bark conjoined with these, or blisters. The pulse was unequal, weak, and very feverish; the tongue moist, covered with a dark glutinous matter; there was great thirst, and the mind was sometimes collected, sometimes deranged. The starting of the tendons always remaining with equal violence, deprived the patients of sleep, reduced the strength, and rendered the disease fatal. Alexipharmac remedies excited a debilitating sweat, and still greater delirium; gentle

“stimulants produced no effect; and diluents
 “and refrigerants alone produced frequent faint-
 “ings. In consequence of which, one of those
 “patients, towards the beginning of the fourth
 “day, in the midst of the startings of the ten-
 “dons and convulsions, after a few petechiæ
 “having appeared, expired. The other, on the
 “fourth day, had a copious eruption of petechiæ
 “without any relief; and towards the close of
 “the sixth day, while the same symptoms still
 “continued, after being attacked with shivering †,
 “died.” This account, I think, affords a very
 clear instance of *malignant synocha*, with a speci-
 men of the treatment, although unsuccessful,
 employed by this very skilful physician. But
 what was to be hoped for in a disease of such ra-
 pid tendency to death, and in so universally
 morbid a state of the nervous system?

* L. c. T. 2. p. 360.

† Ann. Med: 1. mens. Oct. 1758. p. 32. ed. Amstelod.

250. The instance of *malignant synocha*, which
 is adduced by Quesnay from Syden-
 ham*, does not seem supported with
 equal probability. He suspects that
 the *new fever* of 1685, described by
 Sydenham, was of this kind; and
 endeavours to shew, at great length, that the de-
 scription which is given of it does not apply so

The new fever of
 Sydenham, im-
 properly confi-
 dered by Ques-
 nay as a malign-
 ant synocha.

well to any disease as the *malignant synochus imputris* †. But whatever be its nature and origin, concerning which I think proper to say nothing here, it cannot with any degree of propriety be compared with the synochi; because it not only had manifest accessions every day, and resembled a double tertian or quotidian, but also not unfrequently, from being continued, it became intermittent, and was then removed by the bark. Which, as it is peculiar chiefly to remittents, or *synecbae*, so does it widely differ from continents, or *synochi*.

* Schedul. monitor. de nov. febr. ingress.

† Des fevr. contin. T. 2. sect. 2. c. v. § iii. p. 360.

251. Nor can I agree with those who refer to the *synochus imputris* the fever of small-pox, measles, scarlatina, erysipelas, and others of this order:

Why some fevers
are improperly
referred to the
synocha.

1. Because diseases of that kind are by no means to be reckoned among fevers, as we have elsewhere pointed out, (56.); 2. Because the fevers accompanying or preceding these diseases are not all of the continent kind, nor do they observe any regular type, but if any type be ever discoverable, it precisely resembles the nature of remitting fevers, and such as are subject to exacerbations. The same observation is applicable to fevers occasioned by any peculiar

contagion. These are improperly considered by some as species of synocha, while they seem by all means deserving of being expunged (54.) from the number of fevers, which of itself is now sufficiently swelled, and ought not to be extended by the accession of foreign complaints. Thus will the class of fevers, otherwise without end, be restrained within the limits appointed by nature.

THE

PUTRID SYNOCHUS OF THE ANCIENTS *.

252. As the simple synochus approaches very nearly to the ephemera, so does the *putrid synochus* to the simple synochus, as holding on in its course, "without any remission and periodical exacerbation from beginning to end †." But the difference betwixt them, according to Fernelius ‡, entirely consists "in the putrid species arising from more powerful causes than the other, or such as occasion not only inflammation, but also putrefaction." Piso § agrees with Fernelius, when he observes: "The *synochus*

“ is another of the continent fevers, in which
 “ not only the blood has acquired a preternatural
 “ degree of heat, as in the former synochus, (he
 “ means the simple synochus), but has likewise
 “ become putrid.” But since, at present, various
 opinions are entertained by writers concerning
 the nature and symptoms of the *putrid synochus*,
 so as to render it very difficult to determine what
 we ought to understand by this name; before
 entering upon its description, it will be worth
 while to investigate, first the opinion of the an-
 cients concerning this fever and its cause, and
 next that of the moderns, that we may more
 readily arrive at the knowledge of its true dispo-
 sition and character.

* *Synonyms.* Synochus putris, vel putrida, Nic. Pisonis de febr. cogn. et curand. l. 1. c. iv. Synochus putrida Fernelii pathol. l. 4. c. v. Synocha putrida Fortis de febr. et Sennerti de febr. l. 2. c. xi. Synochus putris, sive febris continens Belinii de febr. opp. T. 1. p. 161. Synocha composita, (by the ancients called putrida), Junkeri, Tab. 58. Febris simplex continua Pascoli de feb. P. 2. c. 9. Febris critica simplex Quesnæi Des fevr. T. 2. p. 289. 294. The continued, acute, ardent, or inflammatory fever of Buchan, Dom. Med. T. 2. c. 4. p. 64. Febris continua benigna sporadica of Le Roy, Memoir. sur les fevr. aigües. Febris continua benigna putrida Boerhaavii de cogn. et curand. morb. § 730. et Lieutaudii synops. l. 1. sect. 1.

† Sennert. de febr. l. 2. c. xi.

‡ Pathol. l. 4. c. v.

§ De febr. cogn. et curand. l. 1. c. iv.

253. The *synochi*, then, (to examine the subject more narrowly), or *continent* fevers (194.), are such as are characterised by no certain accessions, or at least very slight ones. Of those, some were called *putres*, others *imputres*, by the ancients. The *imputres*, under which are comprehended both *simple* and *extended* ephemeræ, provided they be pure, run their course quickly, and are generally excited by evident causes, either plethora, heat, increased motion, the retention of superfluous matters in the system, or the introduction of noxious and foreign substances, which, however, unless when combined with malignity, admit of being easily excreted in a short time, without the intervention of any putrefaction of the blood and other fluids. But those were reckoned *putrid* by the ancients, which proceed with equal uniformity, but are attended with more severe symptoms, and are of longer duration; nor do they terminate but by purulent concoction, as it is called, as being supposed to arise from putrefaction and preternatural effervescence of the blood *. They received their name, therefore, from the putrefaction, which they supposed to be generally absent from the *synochi imputres*.

The distinguishing mark of the *synochi*.

* Sennert, l. c. Pifo, l. c. Fernel. l. c. &c.

254. The principal arguments by which they

F f 4

were led to adopt this opinion, were two, namely the peculiar heat which they observed to take place in these fevers, and the appearance of the blood. The former affected the hand with a peculiar pungent sensation, which, according to them, could proceed from nothing but putrefaction. The latter immediately congealed, and was generally covered with a thick, yellow, or white and firm coat. Such blood they called putrid, corrupted, or purulent. But how far they were mistaken, must appear evident to any one who knows that putrefaction and corruption consist in the entire resolution of the component parts of all mixture. In the next place, they were not agreed as to the kind of putrefaction, nay, they debated whether the blood, like the other fluids, could become putrid within the vessels.

Whether or not
the putrefac-
tion be per-
fect?

Most of them, however, affirmed, that in this fever the blood could become putrid, but we must not understand by this, that it became *universally* putrid, (unless, perhaps, when it has arrived at the last degree of corruption, and the disease becomes mortal), but *only certain parts of it*, particularly the *ichorous parts* *. Hence some supposed, that such putrefaction occurring in *fevers of a salutary kind*, that is, benign ones, as the synochi generally are, was not *perfect*, but *imperfect*,

and *similar to suppuration*, but that it was perfect when the fever was pernicious, or deadly †.

* Sennert. l. c. Fernel. l. c.

† Nic. Pifo, l. c.

255. They added, that this was confirmed by purulent concoction itself, symptoms of which, as the disease drew to a Other arguments. crisis, appeared in the matter expectorated, and urine: for they considered the pus itself, which both the matter expectorated, and the sediment deposited by the urine, seem to resemble, as the effect of putrefaction. But others, and among those not a few of the moderns, thought that they had discovered undoubted signs of internal putrefaction in this fever, which they consider as being well named *putrid*, because the sweat, urine, fœces, and breath, in such patients are in general unusually fetid. Nor did they lose sight of the gangrene, and sphacelus, with which both the internal and external parts of the body are not unfrequently affected in this fever, the better to support their opinion concerning the putrefaction of the blood and other fluids. Hitherto we have briefly stated what the ancients formerly meant, and some of the moderns still understand, by the putrid synochus. I shall now proceed to mention how far those who departed somewhat from the opinion of the ancients extended the term.

256. Under it they comprehended all those fevers in which the blood is really in a state of putrefaction and dissolution, so that when it is drawn it remains quite fluid, nor does it ever concrete but with difficulty, or being dissolved in the vessels themselves occasions excessive hemorrhages and other profuse and very fetid evacuations. But by others those fevers are named putrid, the putrid cause of which seems chiefly situate in the *prime viæ* only, and to be gradually introduced into the blood. Some even were for calling those putrid only, which are commonly named malignant; and they blend the symptoms of each kind already described, and constitute a new and arbitrary one. Lastly, others so abuse the name of putrid fever, that they suppose putrefaction to take place universally, and do not hesitate to ascribe to the class of putrid fevers almost all such as are somewhat more than usually severe.

257. But to return to the ancients, it was not without reason that they debated concerning the general meaning of the word putrefaction, and when it took place in the blood and other fluids, and to what extent. For they perceived that destruction of the mixture of the blood and other fluids, and resolution of their principles, accompanied with fetor, (which, according to most, constitutes true

How far the term
putrid fever was
extended.

The objections
which may be
started.

and perfect putrefaction), is entirely incompatible with life. Nor indeed is it likely that the body ever returns to its former state of health, if the blood which has once become putrid cannot be restored to its natural crasis and purity, since it is entirely repugnant to the nature of putrefaction. When, therefore, it ever happens that the fluids become completely putrid, as sometimes takes place in certain pernicious and pestilential diseases, inevitable death is the immediate consequence. Sometimes, in people who are perfectly healthy, there is a very bad smell from the mouth, sweat, stools, urine, and from ulcers communicating with the air; nay, some animals, from all parts of their bodies *, emit a most fetid odour. Would any one infer from this, that the blood in the vessels of those animals is in a state of actual putrefaction?

* In America there is a species of fox, commonly called *Zorro*, the urine of which is of so remarkably fetid a smell, that by emitting it, the pursuit of the hunters is retarded in consequence of the horrible stench it diffuses. The *mustela putorius* of Linnæus, when it is provoked, sends out extremely fetid effluvia. In Italy named *Puzzola*. The *Mustela Erminea* of the same is the most offensive of all in point of smell. The remarks of Haller on this subject, (Phys. T. 2. l. vi. sect. 3. § ix. et § xiv.) shewing that there can be no putrefaction in the blood during its circulation, deserve well to be consulted. But above all it is proper to peruse the observations of Berlinghieri, Professor of the Practice of Medicine, at Pisa, (Considerazioni intorno allè malattie, dette volgarmente putride, &c.

Lucca. 1781.) to shew how erroneous the commonly received and growing opinion is concerning putrid diseases. For he handles it in so masterly a manner, that, if he does not entirely banish it, he seems to reduce its abettors to the greatest extremity.

258. Moreover, it would be a mere loss of time to refute the opinion of such as contend that the putrefaction of the blood is to be derived from gangrene and sphacelus supervening upon the disease, or from the sensation of acrid and pungent heat. For who can be such a novice in physiology as to refer the heat, gangrene and sphacelus, to putrefaction alone? Is not putrefaction frequently the effect of heat, gangrene and sphacelus? It is surely neither a new nor unheard-of thing for gangrene depriving the limbs of life frequently to succeed to cold. Yet what is more effectual than cold in preventing putrefaction? What is colder than a dead body, or mortified limbs*? Not do frequent hemorrhages and other immoderate evacuations authorise us at once to infer a putrid dissolution of the blood, although I do not deny that they may be sometimes joined together. For every one who from his knowledge of pathology has learnt that the blood is poured out from its vessels, not in one, but a variety of ways, and that the secretions and excretions may be increased, will not consider them as proofs of putre-

Continuation of
the objections.

faction alone. Nor is it an universal fact, that all malignant fevers are necessarily conjoined with that putrid dissolution of the blood, so that they alone should be considered as putrid; nor, on the other hand, do those which are combined with it, seem properly always to merit the name of malignant. For more frequently the putrid cause is in the *prima via*; and not only possibly, but manifestly, existing there, it gives name and rise to fevers; but in these the blood is not putrid, as it is said to be in the putrid synochi, nor have they any thing in common with the putrid synochi, because they partake of the nature of remitting fevers.

* “The entire human body,” says Haller, “and gangrenous limbs, when they putrify, have ceased to be warm, and have acquired the coldness of the surrounding medium; but so long as the body continues warm, it never becomes putrid at the same time.” The same author, however, in the supplements to lib. vi. p. 304. lin. 14. does not deny that sometimes in dead bodies, after malignant diseases, the heat has continued for some time “similar to the vital heat,” or, what approaches more to the truth, “little less than it.” But who would ascribe this to putrefaction, since it has been observed after death in such as had been cut off by apoplexy? (Portal in Rozier, 1774. mois Octobre). In fermentation itself, which, however, does not take place in the living body, when it is at its height, the heat does not rise above 75°. of Fahrenheit’s scale; and yet this is less than the natural heat, which is said to be about 88°. If fermentation took place, therefore, in the living body, it would produce a much less degree of

heat than what usually occurs in fever. How, then, can febrile heat be any proof of putrid fermentation of the fluids?

259. Since, therefore, true and perfect putrefaction, corrupting the whole mass of blood, seldom happens during life, and frequently, when corruption takes place in the body, it is imperfect, and different in different cases, as has already been shewn; much less does it seem to be present in the putrid synochus, although that complaint receives its name from the putrefaction supposed to occur in it. For the principal symptoms usually attending this fever by no means point out a putrid dissolution of the blood. Nay, some of them seem to indicate the very reverse, as we shall soon perceive. The pulse, heat, and firm contexture of the blood, which the ancients improperly reckoned corrupted and putrid, and the buffy coat, are so far from shewing that the blood and other fluids are in a state of putrescency, that they rather evince the presence of a certain degree of inflammatory diathesis in them. Nor is it surprising that the ancients believed such blood to be in a state of corruption, since they recognised the same faulty condition in pleurisy, angina, and other inflammations, and without hesitation referred to the class of putrid fevers any one arising from that cause. Likewise the plan of treatment, which

True and perfect
putrefaction
does not exist in
putrid synochi.

they unanimously adopted, affords a proof that they made the putrid synochus to consist in an inflammatory diathesis of the blood. It depended chiefly on copious and repeated bleeding; which no person would assert to be either proper or harmless in the case of true putrefaction of the blood. Besides, in epidemic, malignant, and exanthematic diseases, if ever any doubt arose concerning the propriety of bleeding, it was a maxim among the Galenists, to "let blood freely, if, with fulness of the vessels, putrescency was combined with malignity, and *vice versa* *." How could they have decided the question by this distinction, had they not taken the inflammatory state of the blood † for putrescency.

* Petr. A Castro de febr. malig. puncticulari. sect. vi. aph. 1. et vii.

† Sydenham likewise has written "That the putrid Synochus is to be derived from more material causes than simple inflammation," § 730. N.B. I should wish to apprise the reader, that, whenever the word putrefaction occurs in future, he must not suppose that I mean by it real and complete putrefaction or corruption of the blood, but only an imperfect kind of it, and a certain tendency to become dissolved. Thus, when we speak of any putrid fever, let him understand by it one in which there is too great tenuity and want of cohesion in the blood, and, therefore, in which there is a great tendency to putrescency.

260. What I have just now observed (259.) concerning the nature of putrefaction, may be

evidently collected from the words of Galen *, who has removed every shadow of doubt on the subject, by observing that putrefaction of the fluids in their vessels is similar to what takes place in inflammations, abscesses, and tubercles, and varies according to the nature of the fluid, and the greater or lesser power of concocting it. Which was well known to Van Swieten †, who observes that the ancients by it did not mean that kind of putrefaction, or corruption, which takes place spontaneously in dead bodies, but rather a remarkable change of the blood from its natural crasis, or, as Ludwig ‡ observes, its mixture. Lieutaud is nearly of the same opinion, who ascribes such depravation of the blood to the putrid synochus, that it becomes more prone to alkalescence, but not to putrefaction ; and he denies that in it the other fluids ever acquire marks of putrefaction, unless when they lose their heat and motion, and are subjected to the action of the air. Hence nothing is more consistent with reason, than that this fever, like inflammatory fevers, should require concoction, and that too of the purulent kind, that whatever part of the blood and other fluids, has departed from its natural state, may be changed, and acquire the nature of white, and, as it were, digested pus, to be fitted for undergoing more or less manifest secretion and excretion.

* Galen (De differ. febr. l. i. c. 6.) has the following observations: "The putrefaction of the fluids which occurs in the vessels, like that which takes place in inflammation, abscesses, and other tumors, is twofold; but from the union of the two kinds arises a third. Since the different kinds of mixture cannot easily be enumerated, because they vary according as the one or other kind of putrefaction prevails in a greater or lesser degree. But of the two kinds of putrefaction one takes place in consequence of the prevalence of nature, the other in consequence of its being overcome. When nature prevails, as takes place in inflammation and all phymatous tumors, *pus* is generated; but in the fluids of the veins and arteries is produced what is deposited by the urine, corresponding to the proportion of the *pus*. And this is not simply reckoned *putrefaction*, but is attended with a degree of *concoction*. For while the power of concoction still remains in the vessels, the corrupted fluid is brought to undergo such a change. There is likewise another kind of putrefaction, which occurs when the power of concoction is so weak, that by no change is benign *pus* produced. Which happens sometimes in consequence of extreme want of power of concoction in the vessels, while the corrupted fluid is but moderately depraved. Sometimes, however, the power of concoction is by no means brought to the greatest degree of debility, and yet the fluid is excessively vitiated. Such kind of putrefaction is characterized neither by any particular consistence, colour, nor smell, but the corrupted fluid is always changed according to the substance. But the other kind of putrefaction, which we have said to be attended likewise with concoction, is always changed into one kind of *pus*, colour, consistence, and smell. When, therefore, nature completely prevails, the best kind of *pus* is produced, white, thick, seemingly homogeneous, smooth, and unaccompanied with any degree of fetor. But if it be as it were half putrid, the third kind consists in

“ such a change as we have already mentioned. It has been
 “ observed, moreover, that this kind is extremely various.
 “ For according to the greater or lesser degree of concoction
 “ of which it admits, the distinctions are endless. For some-
 “ times it is rendered white or fetid, or of thin consistence ; at
 “ other times it does not appear white, but livid ; and in all
 “ these respects the varieties are of more or less extent. But
 “ because there are different kinds of putrefaction in abscesses,
 “ in the same manner do varieties take place in the urine in fe-
 “ vers occasioned by putrefaction. For the best kind of urine
 “ which is caused by a corrupted fluid becoming concocted in
 “ its own vessel, has a white, smooth, equal, and by no means
 “ fetid sediment. The worst kind, again, is the reverse of this ;
 “ while that which is of an intermediate kind, is better or
 “ worse, the more nearly it approaches to one or other of these
 “ kinds.”

† Comm. in aph. Boer. § 730.

‡ Instit. Med. Clin. P. 1. c. 1. § 241. in note.

|| Synopf. univ. Prax. med. l. 1. sect. 1. Febr. cont. putrid.

261. Therefore, retaining the old name, (252.),
 although by no means unexception-
 Definition of pu- able, we pronounce putrid synochus
 trid synochus. to be a particular and distinct kind of
 fever, which, like the continent fevers, goes
 through its whole course in an almost uninterrupted
 manner or at least with very slight remissions,
 partaking of the inflammatory diathesis, and
 therefore, in severity of symptoms, and generally
 in longer duration, differing from the continent
 fevers already mentioned. The
 Distinctions. same varieties are generally ascribed
 to it as to the simple synochus, (234.), the first

of which is when the fever proceeds uniformly from beginning to end ; the second, when it is gradually increased ; the third, when it imperceptibly decreases. But the periods of all the other fevers, although they be distinguished either by the nature of the symptoms, or by the crudity and digestion, in simple synochus, do not seem so much to be estimated by the increase or diminution of the symptoms, as by the marks of concoction exhibited principally in the urine.

262. The putrid synochus, like the simple kind, is either *sanguineous*, or it is *bilious* or *choleric*, (236.), according as it is occasioned by pure blood, or yellow bile *. By yellow bile in this case, Riverius † understands the finer and warmer part of the blood, “ which resembles the nature of yellow bile.” By Galen ‡ and Riverius ||, the *bilious* fever is classed among the *ardent* fevers, or *causi*. But the nature of all the ardent fevers, as we have elsewhere remarked (55.), consists in their being perpetually attended with *ardent heat* and *unquenchable thirst* §, although the patients are incessantly drinking. But such distinction, derived from the symptoms, is *accidental*, in the same manner as the *colliquans*, *horrifica*, *asfodes*, *elodes*, *syncopalis*, *epiala*, &c. if there be any more such, as may sometimes be reckoned to fall under the head of the putrid synochus.

* Galen. 2. de method. c. 1. et 9. method. c. 3. et 5. and, lastly, de diff. febr. l. 2. c. 2. et 2. de cris. c. 6.

† Prax. Med. l. xvii. sect. 2. c. 1.

‡ 3. Epid. comm. 3. text. 54.

|| L. c.

§ Galen and River. ibid.

263. Besides these distinctions (161. 262.), all those already enumerated (236. 237. 240.) in some measure belong to the putrid synochus. Hence the same causes which produce the *simple* synochus, give rise likewise to the *putrid* kind; but in the latter case, they are more violent, and derange the blood not only with regard to motion, but likewise crasis and quality; so that not only checked excretion by the skin, but also obstruction of the vessels, or congestion of the blood, or inflammatory diathesis, or, according to the ancients, putrefaction, may be considered as co-operating.

Other distinctions.

DIAGNOSIS.

264. The fever is preceded by spontaneous lassitude, heaviness of the body, disturbed sleep, or watching, loss or diminution of the appetite, and other symptoms, pointing out a bad state of health. At length the fever begins with cold, or shiver-

History of the disease.

ing, by which it is generally distinguished from the *synochus imputris*, and is for the most part lengthened out for two, or even three weeks, attended with the very same symptoms as the simple synocha, but better marked. The heat is more acrid, the watching, headach, thirst, restlessness, and other symptoms more violent; the pulse is not only great, violent, quick, and frequent, but also unequal, irregular, and sometimes hard; the urine is thick and red, without sediment. And if it be the *sanguineous* species, all those symptoms, or even more, are apt to attach themselves to it, which we have already enumerated (238.) at considerable length from Hoffman. But if it be of the *bilious* kind, the heat is still more acrid and gnawing; the pulse is much quicker and more frequent; the urine is thin, acrid, dark coloured, at the beginning crude, and deposits no sediment; there is great thirst; a dry, parched, rough, blackish tongue; there is a bitter taste in the mouth; nausea; bilious vomiting; pale stools; want of sleep; sometimes fatuity; frequent, violent and difficult breathing, with the mouth open; restlessness, anxiety, and all the other symptoms are more violent. And these symptoms are more severe in the *ardent* fever, or *genuine causus*, than in the *bastard*, or *spurious* kind, of which the one is finished in general on the seventh day, the other

on the fourteenth. Sometimes, especially at the beginning, the pulse is somewhat low and small; during the increase of the fever, it is very quick and hard. Pains are felt in the joints and lumbar region. The watching is at times succeeded by delirium or deep sleep. Very rarely petechiæ break out on the skin, but only when the warm regimen has been improperly employed, or when a degree of malignity happens to be combined with the complaint. By those symptoms, therefore, but especially by the acrimony of the heat, and the irregularity of the pulse, may we distinguish the *putrid synochus* from the other species. But such as ascribe a greater number and severer symptoms to it, seem to confound together the gastric, petechial, colliquative, and malignant species of fevers.

265. Hence it appears, that the putrid synochi differ in particular from those which are not putrid only in degree, and longer duration. And although, in point of violence, they sometimes approach pretty nearly to the nature of malignant fevers, and are often mistaken for them; yet, if they be pure, as Lieutaud remarks, they are sooner terminated, are attended with less weakness, and are characterised by a stronger and quicker pulse. But the affections of the brain and nerves, which are uni-

The difference between the putrid synochus and malignant and gastric fevers.

formly present in malignant fevers, especially slow nervous ones, both of the continent and remittent kind, are milder in the putrid synochus, and more quickly disappear, as often as it happens not to be impure, malignant, or complicated. Moreover, in the synochus, concoction and crisis very frequently occur; while the reverse takes place in the others. Besides, this synochus differs widely from the *gastric* fevers, which by many are named *putrid* or *bilious*, because in them, nausea, white or yellow tongue, bad taste of the mouth, fetid breath, swelling of belly, inflation, borborygmi, diarrhoea, small, weak, irregular, and intermitting pulse, generally occur, and the remittent type is preserved.

PROGNOSIS.

266. The putrid synochus, since it belongs to the class of Acute Fevers, is not unattended with danger, especially when it shews marks of malignity or putrid colliquation. But as the disease advances, it readily passes from the state of inflammatory diathesis to that of dissolution of the fluids and alkalescence, especially the bilious kind, and that which has been improperly treated with bleeding. Upon the whole, the *paracraftica* is attended with less danger, the *acraftica* with

greater, and the *epacmaſtica* is reckoned the moſt formidable of all. Thus the exquisite, benign, pure ſpecies, and that which is properly treated, terminates moſt favourably; while that which is not exquisite, but impure, complicated, malignant, attended with ſevere ſymptoms, and proſtration of ſtrength, is pregnant with danger. If ſymptoms of purulent concoction appear on the ſeventh day, and no error be committed, it will terminate favourably upon the fourteenth. If they appear more ſlowly, the perfect ſolution of the diſeaſe is protracted to the twenty-fiſt day, or even beyond it. But when no concoction occurs, and the patient's face remains ſomewhat turgid, we cannot be certain that the diſeaſe will prove of long continuance. The redder and thicker the urine is at fiſt, *cæteris paribus*, the ſafer and leſs tedious does the complaint generally turn out. If marks of concoction appear in it, while in other reſpects the crudity and ſeverity of the ſymptoms continue, eſpecially if the ſtrength be reduced, the patient is in no ſmall danger. White urine denotes danger. When the fever draws to an end, if the ſymptoms return anew, it will ſhortly terminate, that is, on the fourteenth day. For nature ſeems to attempt the concoction more powerfully. On the contrary, a ſmall, contracted, unequal pulſe, and ſpaſmodic affections, prognosticate an unfa-

vourable event. Likewise, obstinate watching, dyspnoea, anxiety, delirium, tension of the hypochondres, and symptoms of crudity, are unfavourable indications. The putrid synochus, when ardent, pure and genuine, is generally resolved in seven days; when not pure, or bastard, in nine, eleven, or fourteen, as we have already hinted. It is, for the most part, resolved by purging, sweat, vomiting, or abscess. It likewise very often proves fatal to old people, as also to such as are attacked with the *causus*, during a cold temperature of the air or season of the year.

THE CURE.

267. As the causes of this fever are nearly the same as those of the simple synochus, so likewise is the cure. Bleeding and refrigerants.

The quantity, heat, and quickened motion of the blood, the inflammatory diathesis, and consequent danger of inflammation, require repeated bleeding. The ancients relied so much upon it, as to prescribe it in order to remove slight delirium. They used to perform the rest of the cure by means of diluents and refrigerants. But in the letting of blood, Cautions. and employment of refrigerants, a certain mean must be observed, that the purulent

concoction, which requires a pretty brisk febrile motion, and a certain degree of heat, may not be retarded : a caution to which particular attention must be paid, when the fever puts on the appearance of the *ardent*, *bilious*, or *malignant* kind. Purging must be avoided

Use of cathartics.

from the very first, unless the *prima via* be loaded with fordes. But if by accident a sudden metastasis takes place to the head, on the authority of Sydenham, after blood-letting, we should have recourse to cathartics every second day, to be repeated, according to Van Swieten, three successive times. For by means of the revulsion which they occasion, patients are said to be happily preserved. Likewise, after the concoction is finished, if the secretion of morbid matter takes place slowly, or not at all, they may be advantageously employed. Then, also, the drinking of cold water has a wonderful effect in allaying the fever, and rouses nature to the critical

Revellents.

evacuations. The delirium, deep sleep, and headach, are alleviated by cupping-glasses, leeches, clysters, epispastics, pediluvium, and other revellents. But if, as sometimes is the case, there is a tendency to a putrid colliquation (266.), we must immediately have recourse not only to strong acids, but also to other antiseptics. The other parts of the treatment may be collected from the general cure of

fevers (42.), and also from the directions already (243. to 248.) laid down.

268. Concerning putrid synochus attended with marks of malignity, or that which is of an impure and complicated kind, (as the epidemic commonly * is), I purposely omit speaking here, since the observations already made upon the simple synochus may very properly be transferred to this place. Coyttar †, in describing the *petechial* disease, or *epidemic petechiæ*

of 1557, thought that he had discovered in it each kind of synochus, namely, the short or simple, and the long or putrid one, named by him *purple*, or *petechial*. Nor is that to be wondered at, since such exanthematic febrile diseases readily put on the appearance of any fever, when they rage epidemically, and according to the variety of temperaments, ages, sex, combinations, causes, and other circumstances, resemble sometimes one, sometimes another kind of fevers. Hence, if they are reduced under the head of fevers, Petrus A Castro ‡, speaking of the malignant *febris puncticularis*, which prevailed epidemically in his time, has very justly remarked, "That in them the fever was continued, but not confined to any of the continued kind." Nor can it be otherwise, since such diseases, when they are pri-

The simple and putrid petechial synochus of Coyttar.

mary, by no means belong to the class of fevers; which we have mentioned elsewhere.

* Nicolaus Rigler gives an account of the putrid synochus, of the kind named *anabatic*, which was moreover malignant, nay, pestilential, epidemic, and contagious, with dissolution of the humours, that is, truly putrid, of which he observed the following species. 1. The malignant putrid synochus without any eruption. 2. The malignant putrid synochus with an eruption. 3. That combined with buboes, anthraxes, and therefore pestilential. 4. The kind unaccompanied with these, as in most cases. 5. That attended with some inflammatory spissitude of the blood. See his *Constitutio Epidemica*, in the year 1775, 1776, 1778, and 1779. Vratislav. 1780:

† De Febre purpura epidemiali et contagiosa, c. 19: p. 166. et seq.

‡ Sect. i. aph. 3. p. 3. ed. Patav. 1653.

269. Several other species of fever are classed by Nosologists under the head of *putrid synochus*, which, however, by no means seem to belong to this kind. Lieutaud refers to it the *febris depuratoria*, mentioned by Sydenham *, observed in the year 1661, 1662, 1663, and 1664. But his description has nothing in it which can apply to the synochus, from which it differs so widely, that it might with more justice be referred to the pure or compound remittents, or those called proportionatæ, fruce, though continued, it partook much of the nature of intermittents, nay, was often

Improperly e-
steemed species
of synochus.

changed into them † ; which never happens in the case of true and pure *putrid synochus*. Nor does Sauvages ‡ with more propriety consider as a species of this synochus the *epidemic continued fever* of the year 1665, and 1666, the *variolous fever* of 1667, 1668, and 1669 ; the dysenteric, pleuritic, and others de-
A mistake of Sauvages.
 scribed by Sydenham ; for, whoever takes the trouble to consider their histories, will quickly find, that it either does not appear, from their imperfect description, of what kind they were, or that they were far removed from the synochi, or that they rather belonged to other diseases than to the class of fevers. Much less must we refer to the synochi the twelfth species, or the *soporosa* of Guarinonius, the thirteenth, or *scorbutic* of Sennert, and the fourteenth, or *putrid miliary*, that prevailed in the year 1754, mentioned by Gerard upon Vandermond ; which are pointed out indeed by Sauvages, (p. 311. of the *Diar. Med.* 1756.), but not sufficiently considered. For all of them differ widely from the nature and character of continent fevers. Likewise the *putrid catarrhal fever* of 1768, which raged epidemically at Moscow, seemed to Mortensius || to be a *putrid synochus*, conjoined with an *intervening catarrhal fever*. Perhaps, if it really belonged to the *putrid synochus* of the ancients, it was some malignant species of it. From the description,

however, given by Mertenſius, it ſeems to have been a *malignant gaſtric fever*, combined with catarrh, which was doubtleſs very different from the ſynochi, as reſembling the nature of *remittents*, or only to be claſſed among exanthematic febrile diſeaſes, ſince it was uniformly attended with petechiæ and the miliary eruption. The *malignant fever* of Fortis, the hiſtory of which is delivered by the author, in the book *De Febris et morbis mulierum* §, is more properly referable to the *putrid* but *malignant ſynochus*.

* Synopf. Univerſ. Prax. Med. l. 1. ſect. i. cap. de feb. cont. put.

† Obſerv. Med. circa morb. acut. ſect. 1. c. 3. and 4. and ſect. v. c. vi. in which laſt place he ſays, “ I think it worthy of remark, that ſince this fever, (*viz. depuratoria*) which depended on that conſtitution of the air, in conſequence of which intermitting fevers prevailed over others, (if it either continued longer, or the patient was exhausted by exceſſive evacuations), eaſily paſſed into the camp of the intermittents; thoſe fevers which prevailed for ſome years afterwards, although they proved very tedious, ſeldom became intermittent; affording a pretty clear proof, that that *continued fever*, (namely the *depuratoria*), and thoſe intermittents, either agreed in ſome meaſure in their nature, or at leaſt were not very different from one another.

‡ Noſol. Meth. l. c. gen. 3.

|| Obſerv. med. de febrib. putrid. P. 1. cap. 1. p. 1. and 12.

§ P. 281. ed. Patav.

THE

SLOW NERVOUS FEVER, COMMONLY
CALLED MALIGNANT *.

270. The English of late years have begun to name that fever *slow nervous fever*, which had been commonly called by the name of *malignant*. It is a fever of the continent kind, continuing for more than two or three weeks, with the heat, urine, and pulse, (at least with regard to frequency), like those of people in health, while there is universal debility. It is called *nervous*, from seeming to affect the brain and nerves particularly; but *slow*, because of its generally proceeding slowly, and in such a manner, that after passing one and twenty days, is very frequently, in consequence of some change, becomes referable to *acute* diseases. But it has hitherto been named by physicians *malignant*, because under the favourable appearance of natural heat, pulse, and urine, it insidiously deceives the patient, and whilst he suspects nothing dangerous, symptoms of a very terrible kind appearing, it shortly cuts him off, after having been considered from the beginning as slight, benign, and free of any danger.

* *Synonyms.* Febris pestilens Fracastorii, De morb. contag. l. 2. c. 4. Febris maligna cacoethes, seu mali moris Bellinii, de febr. p. 165. ed. Venet. Febris lenta, sive hectica nervosa, an. 1661. Willisii, de morb. convul. c. viii. Febris maligna Fizezii, Traité des fevr. c. vi. Febris lenta nervosa Huxhamii. de febr. cap. vi. and that of the English. Febris malig. lenta Vogelii, de cog. et cur. mor. § 56. Febris maligna in specie Auctorum Volprechti, differt. de febr. nervos. ejusque genuina indole Götting. 1767. sub præsid. Vogelii. Febris maligna, ut vocatur Parisiis, Lorry, de Melanchol. T. 1. p. 117. Febris pessimi moris an. 1711. Morgagni, de sed. et caus. morb. Ep. vii. artic. 16. Febris maligna Quarinii, Method. Med. febr. c. v. Febris lenta, aut nervosa Buchanii, Domestic Med. T. 2. c. 8. Febris putrida nervosa, an. 1770, Merteasii, observ. med. P. 1. c. 3. Febris lenta acuta sive nervosa De Meza, Comp. Med. Pract. Fasc. 1. c. x. Typhus (a) Sauvages. Nosol. cl. 2. gen. 4. sp. 2.

(a) Vogel, in the place already quoted, is of opinion, that Sauvages had no reason for considering this fever as a *typhus of the first and second species*, of which an author makes mention, in Hippocrates, concerning *internal affections*. "For," says he, "except the extreme debility which Hippocrates ascribes to his typhi, they have nothing in common with our fever, and are distinguished from it particularly by excessive heat, and their being of shorter continuance." Nor is he wrong. For the first species differs widely from the nervous fever, because "these fevers attack the strong, and are attended with acute heat," &c. and because "few escape them, and they prevail in the summer time during the sultry heat, when the system abounds with bile," and because the disease is usually of short continuance, that is, generally of from seven to fourteen days standing. And if it ever exceeds that time, it is never extended beyond the twenty-fourth day. Nor can it be the second species, "because a tertian or quartan arises at first, and there is a violent pain in the head, sometimes likewise an intermit-

tent all over the body; there is a flow of saliva, and frequent eructations, and pains in the eyes, and the face becomes white, the feet swell, and, lastly, sometimes the whole body swells."

271. But that the appearance of this fever may be rendered more familiar, I shall proceed to detail the symptoms History of the disease. which precede, accompany, and succeed it. A person who is predisposed to it, feels himself at first uneasy and restless, receives amusement from nothing, and knows not what he would have. In the mean time he suffers some slight and uncertain vicissitudes of heat and cold, affecting especially the head and face; he complains of lassitude, as if arising from labour, but still walks about yawning and in a state of languor. These symptoms, however, happen chiefly when the disease arises spontaneously, and is not occasioned by contagion. For then the beginning and progress of the complaint are more rapid. After these there shortly comes on a sense of weight in the head, sometimes greater, sometimes less, at other times pain, vertigo, constriction of the temples, despondency, and unusual oppression about the breast. Shortly afterwards to these are added nausea, loathing of all kinds of food, without any uneasy sensation of thirst, or desire of drink, and often with a frequent inclination to vomit, by which generally nothing is thrown up,

or if any thing is ejected, it is only a little insipid phlegm. Sometimes all those symptoms cease for a few hours, but shortly return with greater violence, especially towards the close of day; for the head then grows more and more heavy and warm; the mind becomes confused, the pulse more frequent, but always languid and irregular, with generally some dyspnoea, straitening and oppression at the breast; often great stupor, obscure pain, and a sense of cold affects the back part of the head, or an oppressive pain stretches along the coronal suture. For each kind of pain is almost peculiar to every slow fever, and is for the most part attended with some degree of delirium. But the heat is commonly mild; nor is it apt to become excessive. Sometimes, however, the palms of the hands are warm, or the head sends out warm vapours, and the face is often flushed, while in the mean time the feet and extremities are cold.

272. For five or six days does the patient continue in this doubtful state of health, pale, torpid, with limbs as it were broken, not
 End of the first stage. entirely ill, but far from well, nor quiet, generally restless and wakeful; and although to the by-standers he appears to enjoy sleep, he constantly affirms that he can enjoy none at all. And I believe that they always speak the truth: For the patient often remains

so quiet, and so resembles a person asleep with his eyes shut, that it cannot be denied that he is in fact sleeping. But to himself he does not seem to be sleeping; his imagination being constantly haunted with such a variety of spectres and illusions, that he believes himself to be altogether awake. During the whole of this stage his pulse is quick, weak, and irregular, sometimes fluctuating, sometimes slow and intermitting; from time to time it becomes quicker, shortly falling again, and growing uniform and regular, and thus varying alternately. In the same manner the face at one time becomes flushed with frequent and sudden heat, which rises like vapour; and in a short time becomes pale and white again. Hence it happens, that the disease is frequently taken by unskilful practitioners for a hypochondriacal or hysterical affection.

273. And now the disease increases daily; now the patient feels pain in speaking or moving, and at length betakes himself to
Second stage.
 bed; nor can he give a distinct account of his complaints. He calls for nothing, not even drink; and when a question is put to him, he scarcely knows how to give a proper reply to it. Now subsultus tendinum comes on, and his hands and tongue tremble. The latter being covered over with a white mucus, does not grow very parched, unless in the middle, where it ap-

pears brown and dry. At length he speaks incoherently, and becomes slightly delirious, but without any fury being present. He generally passes thin urine, sometimes limpid, sometimes like vappid wine, or turbid small-beer, and thick, not unfrequently also greenish, occasionally of denser consistence, as if flour had been thrown into it and had fallen to the bottom, or rising and subsiding irregularly. In the mean time the blood which is drawn appears either natural, or covered with a thin pellicle, but with a lax, black crassamentum, easily divisible. It is sometimes likewise, apt to dissolve, and abounds with turbid serum.

274. About the seventh or eighth day after the patient betakes himself to bed, all the symptoms are aggravated. The cheeks

Third stage.

become redder, and the palms of the hands warmer. The heaviness and pain of the head grow more troublesome; giddiness and tinnitus aurium succeed, by which last the mind is almost perpetually harassed, and not a little deranged; but not so much as to give rise to violent delirium, since, instead of it, there is generally a certain derangement and confusion of all the ideas, thoughts, and actions, depending upon them. Hence the patient generally always mutters to himself, and pronounces his words broken, as it were, and difficult to be understood. That

chiefly happens in sleep, or when he is awaking from it; for then the mind labours under greater confusion, but shortly after returns to itself, though it does not long remain collected. The oppression at the breast, languor and loss of strength, increase so much, that the patient is seized with swimnings in the head and fainting, especially on attempting to rise out of bed; for then his fore-head, and back of his hands, are covered with a cold sweat, and his senses fail. The tongue, which was before moist and white, now becomes parched, red, and cracked, and in colour resembles the skin of a pomegranate, especially in the middle, while on each side it is covered with a yellow mucus. When it is thrust out, it is tremulous; and, although it and the lips are parched, there is scarcely any thirst. But the patient often complains of acrid and uneasy heat in it.

275. On the ninth, tenth, or twelfth day, short and irregular, or profuse and sudden, sweats break forth, but Fourth stage. viscid, cold, and glutinous, affecting especially the extremities. Frequently crude, liquid and watery stools supervene. On the whole, the sweats and stools are of the colliquative kind, and inimical to the strength. Not unfrequently, however, a warm kind of moisture, spreading over the whole skin, proves serviceable, as also a gentle

diarrhœa, which generally puts an end to the delirium and comatose affections. It is during this stage chiefly that nature fails, the extremities being cold, the nails pale and livid, the pulse small and quick, so as scarcely to be felt or numbered, although it was before slow or intermitting; or it fluctuates, and is interrupted in such a manner, that it seems to point out the near approach of death. The patients lie stupid, and are almost deprived of sense. They are then scarcely roused by noise and the approach of light, which formerly used to prove extremely offensive to them. The delirium is gradually succeeded by coma, and in a short time by everlasting sleep. The alvine fœces, urine, and tears, flow spontaneously, and without the knowledge of the patient, and portend immediate dissolution. But the tremors and startings of the tendons often denote a spasm threatening the whole body, by which the thread of life is quickly cut. For in one or other of these ways, after languishing fourteen, eighteen, or twenty days, nay, often many more, are they at length carried off.

276. Sometimes they grasp the bed-cloaths in their hands, or catch at imaginary phantoms, while they remain silent, with the face of a corpse, or send forth cold sighs from their breast, which are generally a proof of death being just about to take

Certain symptoms
not uniformly
present.

place. Some, although formerly of great courage, are seized all of a sudden with terror and despair; nor will they go to sleep, in order that they may avoid the death and perturbation of mind which they suppose they undergo, or actually do experience, while asleep. Sometimes pustules and spots of different colours appear on the the surface of the skin; among which, brown, livid, or black * petechiæ and vibices disfigure the body. Sometimes swelling of the parotid glands, and abscesses of the ears and other parts supervene. Occasionally, white, red, corroding, black, gangrenous aphthæ affect the lips, tongue, and fauces, especially when the fever is combined with a putrid dissolution of the fluids, and is pestilential and contagious. Sometimes the force of the disease is directed towards the os sacrum and nates, and after redness, pain, and swelling of the skin, continuing a short time, the parts below become dry, with a black or moist gangrene, more or less deep seated, mortify and emit a fetid smell. Generally, unless the disease be very malignant, it is of long continuance, the patient lingering for forty days, nay, sometimes longer, and, in some of them, even after the fever has been overcome, the mind remains unsettled for some time until it gradually recovers its vigour.

* Pringle (Diseases of the Army, c. 6.) himself does not deny that there is a great affinity between the fever called *maligna*

na in specie, and the slow nervous fever. For, he observes, that both have in common to them a languid pulse, palish urine, sweats that are not critical, alienation of mind, loss of strength, oppression of spirits, trembling of the joints or nerves. But they are distinguished, as he thinks, by the nervous fever not arising from a putrid cause, and because it is attended with the miliary eruption, not petechiæ. But both observations are false. For the origin of the nervous fever is manifold, and, sometimes, like the *contagious, hospital, ship and jail fever*, of which hereafter, arises from putrid exhalations. But the miliary eruption does not always attend it, (otherwise it would be the miliary fever), but only sometimes; nor are real petechiæ at times absent from it, as I have frequently observed.

277. In point of uniformity of continuance, it is like the *putrid synochus*, but is distinguished from it by the symptoms already (267.) enumerated. It is distinguished from the petechial disease, or *peticulæ*, or, as it is named by others, *putrid, malignant petechial fever*, by the latter attacking with greater violence, and by the shivering and heat being both greater and of longer continuance in it; by the pulse, especially at the beginning, being harder and more tense; by the head-ach, vertigo, nausea and vomiting at the beginning of the complaint, being more intense; by the temples, nay, the very orbits of the eyes, being affected with a fixed pain; by the eyes appearing heavy, yellow or red; by violent throbbing of the temporal arteries, with frequent tinnitus aurium; by its having daily

exacerbations, like intermittents ; by more violent pulsation of the carotids during the increase of the complaint, although the arteries at the wrist beat more slowly and gently than common ; by more distressing fainting and dejection of spirits, although not preceded by any immoderate evacuation, and the pulse seems sufficiently strong ; and, lastly, by generally more laborious and unequal respiration, often accompanied with pain, sighing and hiccup. Besides, the *slow nervous fever* differs from peticulæ and other exanthematic diseases, by these eruptions, when they do take place, being generally owing to the warm regimen, and, when they appear spontaneously, by their usually breaking out principally at the height of the complaint, or towards its termination ; and by their not uniformly appearing in every case ; while, on the contrary, in the true, primary petechial fever, and other exanthematic complaints, the petechial and miliary eruption, that of small-pox, measles, &c. if they are regular, break out before the height of the disease, at its very commencement, and are never absent, when they constitute the primary complaint. It is likewise easily distinguished from the *malignant gastric* fevers, because they are varied by more manifest accessions and remissions ; nor do they exhibit such uniformity of continuance ; and they shew more

evident symptoms of depraved digestion in the *primæ viæ*.

278. This fever generally attacks people of a lax habit of body, weak nerves, thin, watery blood; exhausted either by excessive evacuations, or weakened by grief, or too long continued watching, excessive study and fatigue, or who have lived on crude and bad kind of food, watery, impure drink, or have been long exposed to thick, contaminated air, or enervated by salivation, diarrhoea, or excessive venery. When it arises from

such causes, and here and there affects a few individuals only, it is named *spontaneous* and *sporadic*; and

seems to depend not so much upon extreme laxity of the solids, conjoined with tenuity of the blood, but also upon the lymphatic fluid, vitiated in quantity and lentor, affecting the brain and nerves in particular, and at length, as it cannot be resolved, becoming putrid. And this fact is proven by the very method of cure, which is best accomplished by means of mild cordials, attenuants, antiseptics, and gentle stimulants. For by means of these we rouse the force of the heart and nerves, we resolve the lentor of the lymph, and evacuate any corruption, not only by the usual excretions, but also by such as we excite by art. Hence, there is generally occasion for all

The person pre-disposed to the complaint.

Whence the sporadic kind?

the evacuations together, namely, the sweat, salivation, urine, diarrhœa, exanthemata, abscesses, nay, sometimes artificial ulcers, and gangrene itself, to eject the noxious and vitiated humour from the system. For it very seldom happens that this fever is terminated by concoction and crisis.

In what ways it is resolved.

279. But when the usual causes affect several people at the same time, and render the disease general, then it is the *epidemic* species, and attended

When it is epidemic.

with greater danger. In which case, unless those who are in health take care of themselves, on imbibing the miasma, which is so malignant and inimical to the nerves, they are extremely apt to fall into the complaint. It is then also called *contagious*, on account of its being

diffused, by means of very subtle and putrid effluvia from the persons

Sometimes contagious.

affected with it, into the bodies of the bystanders and attendants. It is sometimes contracted merely by remaining in air abounding with putrid and morbid effluvia, as

often happens in hospitals. It then appears that it proceeds from *putrid*

When it proceeds from putrid contagion.

contagion, and may be called *Hospital fever*, although every *hospital fever* does not belong to this kind of fever *. It is likewise a well-known fact, that unless care is taken to renew the air in

which a good many persons even in perfect health are long crowded together, as often

That which is
called hospital
fevers.

happens in ships and prisons, it becomes so contaminated with human

effluvia, that like a poison it proves fatal to animals introduced into it, by destroying the power of the nerves and heart. The fever arising from this cause is generally a *slow nervous one*, and is called the *ship*, or *jail fever*, and

The ship and jail
fever.

is often so pestilential, that, like a plague, it is propagated with asto-

nishing rapidity to persons who are near, and otherwise in perfect health, merely by the presence of the sick. But in these species, namely, the *epidemic*, *contagious*, *hospital*, *ship*, and *jail fever*, as their cause is more active and pernicious, so is their progress observed to be quicker, which is sometimes by no means slow. Nor is it an uncommon occurrence for patients to be cut off within a few days, contrary to what usually takes place in this disease, its termination, whether good or bad, generally happening very slowly.

* The *hospital* fever, which arises from contagion in hospitals filled with the putrid effluvia of the sick, is generally a *petechial* and *remittent* fever, not a *continent* and *slow nervous one*; as shall be shewn when we come to treat particularly of the *petechial* fever, as an exanthematic febrile disease. Monro (on the Diseases of Military Hospitals) is nearly of the same opinion, holding the malignant fever called *hospital* fever, and the *petechial* fever, to be the very same disease.

280. But not only diversity and greater or lesser severity of the preceding causes, but also greater or lesser danger of ^{Other distinctions.} the symptoms constitutes such differences (278. 279.). The appearance also of the same fever varies not a little, according to the temperament, habit, age, sex, time of year, nature of the season, and prevailing disorder; by paying attention to which, every one who is not grossly ignorant will easily understand the varieties which the disease undergoes, so as to appear different in its nature. At the beginning also some criterion is afforded, particularly by the complication of causes, or diseases, according as the fever is conjoined * with an inflammatory, rheumatic, or catarrhal diathesis of the blood, or with a tendency to dissolve, or become putrescent, or with a putrid depravation of the digestion, proceeding from worms in the *primæ viæ*. For hence different symptoms arise, which are apt to mislead the unskilful. And hence may frequently be derived the various and discordant opinions of physicians concerning the same fever.

* Sims (on Epidemic Diseases, p. 167.) has lately endeavoured to shew, by various arguments, that the *slow fevers* of Huxham and the English are of the *gastric* kind, or such whose cause is seated at the bottom of the stomach. But his arguments scarcely, if at all, prove any thing. I believe, however, that this author, who in other respects shews the clearest judgment, fell into this mistake from the circumstance,

that in the country where he lived, in which gastric fevers occur very frequently, not only depraved chyliification often takes place, (a thing which is common to damp, marshy situations), but is also combined with slow nervous fevers; and he was, therefore, easily led to believe, that these fevers also arise from depraved digestion, that is, are to be considered as wholly *gastric*.

THE PROGNOSIS.

281. The malignant and crafty nature of the fever always renders the event doubtful. In the *sporadic* and *spontaneous* species, if it be pure, there is danger, indeed, but less than in the others; more in the *epidemic* and *contagious* kind; and most of all in the *hospital*, *ship*, or *jail* fever; as also in that which is combined with a putrid dissolution of the blood, or which originates from a poisonous miasma. But if about the ninth, tenth, or twelfth day from lying down, the tongue becomes moist; if the expectoration comes off freely, if the belly is gently loose, and the skin slightly moist, or an abscess takes place in either ear, or broad pustules break out on the lips or nostrils, some favourable crisis may be expected. On the contrary, if the belly be very loose, if wasting sweats occur, giving rise to frequent faintings; if the tongue quivers, the extremities grow cold, the

Favourable symptoms.

Unfavourable symptoms.

pulse fluctuates, or is of the kind named *Vermicular*, if subfultus tendinum, loss of sight or hearing, take place; if the fœces are passed involuntarily; death may be justly apprehended*. Of such as are seized with sudden despair, and can be roused by no assurances, I have scarcely ever seen one, at least very few, survive.

* Buchan, Domest. Med. T. 2. ch. 8.

282. In particular, short, cold sweats, or flowing about the neck or head only, are bad; it is likewise a fatal sign to grow cold all of a sudden while

Other marks, both unfavourable & favourable.

the sweat is flowing. Moderate purging is serviceable; excessive, crude, and watery stools, are hurtful; leaden-coloured and livid ones, although they now and then stop, are dangerous. Stupor alone, or debility, is not always to be dreaded; for frequently deafness is the cause of the seeming stupidity. Red, florid, numerous spots, or full miliary pustules, breaking out about the height of the disease, not unfrequently announce a favourable event on the seventh, ninth, eleventh, or fourteenth day, or even later, according to the longer or shorter course of the disease, especially when the saliva is spit out in great quantity, or thick, turbid urine is passed, and the severity of the symptoms abates. But dark black spots, or vibices, resembling small gangrenes, denote sudden

corruption of the blood, and consequently imply imminent danger. The miliary pustules, both white and red, point out the abundance of the morbid matter, or the effect of the warm regimen. But even after the pustules themselves have been expelled by means of the warm regimen, the patients do not feel better; since, however, they may be reckoned critical, or rather are the primary disease, the patient's health would have been better ensured by a full eruption taking place. White, benign aphthæ, surrounding the tongue and lips, are not a bad symptom; but black, livid ones, extending to the fauces, are unfavourable. Likewise deafness and abscesses happening about the ears, if they take place late in the disease, afford some hopes; provided other circumstances correspond with them. Nor is it uncommon for gangrene of the external parts, especially of the *coccyx* and *nates*, to indicate that the deleterious * violence of the disease is fortunately directed to an external part; which we may understand has happened when, as the gangrene appears, the head and breast are relieved, and the fever abates. But particularly a full, strong, equal pulse; easy, free, tranquil respiration; soft, warm, and universally moist skin; and the ceasing of the spasms afford hopes of a favourable issue. Sometimes also the morbid matter is carried to the urinary passages and the blad-

der, in consequence of which the urine is passed with difficulty, thick and purulent; nay, sometimes ischuria comes on, generally affording a favourable indication, although the urine ought to be extracted by means of the catheter for some days, until it flows spontaneously. Such symptoms as these in general, according to Hippocrates †, announce the patient's recovery.

† In malignant and contagious diseases, nature frequently forces out the heterogeneous and poisonous cause of the disease to external parts. Hence also gangrene is often produced about the coccyx, os sacrum, nates, and other parts, which if it does not resolve, at least very often diminishes the disease. This has been remarked, especially by Quesnay, and not a few other practitioners. I myself have frequently had an opportunity of seeing the same thing. But lately, in the *Constitutio endemico-epidemica febrium malignarum*, well described and published at Modena by Baraldi, an. 1781, this happened so frequently, that from the appearance of such a gangrene he could always guess a favourable event; and though it turned out otherwise in the epidemic fever, which raged at Cuneum in the year 1774 and 1775, in the learned and elaborate history of it given by Lanterius, a man of most extensive practice and well-skilled in medicine, it is asserted, that the gangrene which often succeeded to the application of blisters, was always salutary, as if the deadly power of the disease had become concentrated there, leaving the internal parts of the system free.

† Epid. I. 1. et Gal. in comm. T. 4. ed. in 12. p. 124.

THE CURE.

283. From these observations it readily appears, that neither bleeding nor purging by themselves are required in this disease ; especially in those of a lax and debilitated habit of body, or such as use a crude, bad and corruptible kind of food, or have experienced excessive evacuations, or are worn out with grief and intense study, or who breathe an impure and vitiated atmosphere, as most of those do who are exposed to this fever. Much less is it proper to let blood in the *epidemic, ship, jail, or hospital* kind, or that occasioned by *putrid contagion*, or by a tendency in the blood to dissolution. Nevertheless, if plethora is present, if the vital powers are not too much exhausted ; if the age, habit, season, and the violence of the pulse indicate it, or lastly, if the complaint be combined with an *inflammatory diathesis of the blood*, a vein may be opened ; but that must be done only at the commencement of the disease, and very sparingly. For frequently a second bleeding, or even a first one which is rather too large, reduces the strength, occasions delirium, or, if it be already present, increases it. And it must be still less repeated, if the blood at first drawn grows

With regard to
bleeding.

livid, leaves little crassamentum after cooling, and much turbid, or dark-coloured, serum rises to the surface, as generally happens.

284. But the blood is drawn more safely by means of cupping-glasses, which also relieve the head and oppression of

Cupping safer.

the breast much more certainly; nor does any bad consequence arise from the repetition of them; which cannot be said of venesection. We may likewise use cupping-glasses during the increase, or at the height of the disease, if delirium or coma oppress the patients.

Nor are leeches applied to the temples or anus, without their uti-

Leeches and blisters.

lity. After phlebotomy, or some other mode of letting blood, if the head-ach and vertigo do not remit, let two blisters be immediately applied behind the ears; and this may be done without apprehension even at the beginning of the complaint.

285. As the state of the strength renders the propriety of blood-letting equivocal, so does it prevent our having re-

Purging.

course to purging. For when purging is inconsiderately employed, though at the beginning of the disease, it has been known to occasion extreme languor, fainting, looseness, and other sad consequences. It may sometimes happen, however, that there is occasion even at the beginning

for some gentle laxative, when the *primæ viæ* are oppressed with sordes, when there is still sufficient strength, and no danger of putrid colliquation. But the belly, in that case, must be excited with very great caution, first by means of an injection, next by a gentle cathartic of rhubarb, or manna, or tamarinds. This is attended with most advantage when the nervous fever is combined with vitiated digestion of the *primæ viæ*. "It is, therefore, not without reason," as Gorter * observes, "that eminent practitioners have treated the slow, or nervous fever, with gentle purging every second day."

* Exercitat. Med. quinta de Action. viventium particular.
§ xxii. inter Opusc. varia Med. Theoretica.

286. But the exciting of vomiting is preferable to purging; for it is less apt to disturb the operations of nature; moreover, when nausea, weight and pain of the stomach, and other symptoms of depraved digestion are present, or the disease arises from contagion, or putrid effluvia, or from the air being vitiated with malignant miasmata, a *gentle emetic*, exhibited at the very beginning, is to be preferred to other remedies. For by means of this, not only pituitous, viscid or biliary sordes, or any putrid miasma infecting the saliva and gastric juice, but also the whole vascular system re-

Emetics preferable.

ceives such a shock, that any thing sluggish or viscid, stagnating or sticking in the vessels, is removed from its place, and returns into the circulating mass. But vomiting is most gently excited by the powder, or an infusion of the root of ipecacuanha, oxymel of squills, or tartar emetic dissolved in a great quantity of water, and taken at different times. The efforts to vomit at the same time ought to be assisted by the drinking of tepid water, or abundance of weak soup, that the vomiting may be the better borne, until enough appears to have been thrown up. And if the indications for exciting vomiting still continue, or return, and there is nothing to contra-indicate it, the emetic may be repeated. It is not, however, every desire to vomit, nausea or vomiting, which requires an emetic; for frequently mere disorder of the nerves, and a spasmodic affection or inflammation of the stomach, or violent motion of the blood, or severe head-ach, and the like, give rise to such symptoms, in which case the phenomena of depraved digestion are altogether absent. It is, therefore, necessary to inquire carefully, before exciting vomiting, whether in fact the *prima via* be loaded with fœces, or an epidemic miasma, or contagion taken into the system, has infected the saliva and gastric fluids.

287. But before proceeding to excite vomiting,

it is of great consequence to carefully consider whether any thing contra-indicates it, which is generally pointed out by general Therapeutics; and the fulness of the vessels, if it be greater than common, must be brought down by bleeding, and by exciting a blister behind the ears by means of cantharides, lest, in consequence of vomiting, the distended vessels be burst, or the sluggish and viscid gluten of the lymph be forced deeper into the brain, unless the vessels be previously emptied, and it be derived to some external part. When the purging or vomiting, as either of them may have been necessary, is now finished, if the belly continues bound, it may be most safely moved by an injection of milk, sugar, and salt, every third day, repeated during the whole course of the disease, as often as occasion may require.

288. Such is the utility of cantharides applied externally, that ulcers excited by means of them behind the ears (284.) ought to be kept open, until the fever has been entirely discussed. When, therefore, they begin to dry, we must take care to renew them by again spreading powder of cantharides upon them. Moreover, at the very beginning of the disease, if there be severe head-ach, a blister of cantharides, should be applied to the head, previously shaved; for by means

Rules to be observed in using blisters.

of it threatening delirium is usually prevented. Nor do the patients feel much pain in consequence of it, being rendered insensible by the stupor. But the more such ulcers are inflamed and pained, and the more benign and copious pus they pour out, the more favourable is likely to prove the event of the disease ; and otherwise. As the disease advances, also, cantharides may be applied to the arms, thighs, or calves of the legs, to excite blistering, if the vital energy be too languid, the mind torpid, or an eruption of spots threatening to take place, induces anxiety, difficult breathing, delirium, and weight at the breast, causing the suspicion of peripneumony being present. But these symptoms usually depend rather on the spasmodic affection of the fibres and nerves, than on inflammation and congestion of blood in the lungs. For then the respiration is dense indeed, unequal, accompanied with sighs, and at times difficult, but not warm and conjoined with a cough, as is the case in peripneumony. The pulse likewise gives proofs of a spasmodic affection, for it is found to be small, contracted, irregular, and quick. In which case we must beware of bleeding, unless more certain marks point out the presence of inflammation. Such spasmodic affections are also confirmed by the pale, watery, limpid, and copious urine, which generally at-

tends this fever, and points out the impropriety of bleeding.

289. Since, therefore, in a fever of this kind, the irritability and sensibility of the nerves are principally torpid, and the circulation of fluids is retarded, especially about the brain, what can be more efficacious than cantharides applied to the skin, to excite the former and promote the latter? What can be found more convenient? Or what more apt to produce revulsion and derivation towards the surface? However,

Cautions respecting the use of blisters.

when the blood is either already dissolved, or approaches very nearly to a putrid dissolution, which chiefly happens when the disease rages epidemically, or has arisen from putrid contagion, and is advancing to its acme, we must not rashly employ the cantharides, which would increase the putrid dissolution, unless their septic and dissolving power be counteracted by means of antiseptics and strong acids, which prevent the progress of such a dissolution. It is, therefore, the province of a prudent physician to apply this powerful remedy at a proper time, and with due caution.

290. But the whole plan of cure should be directed, (as we are informed by the experience of eminent physicians *), to rouse the languid strength, and excite it by a gentle stimulus, to remove len-

The principal and more general indications.

tor, and to add to the blood recent and salutary fluid, to supply the place of that which is acrid and vitiated. Among the cordial and alexipharmac remedies, possessing an aromatic stimulus, (which are suited to this fever, especially the *sporadic* and *spontaneous* kind, because they are attenuating, inciding, and gently exciting), are celebrated contrayerva-root, scordium, rue, angelica, carduus benedictus, volatile salt of amber, hartshorn, the same with amber, tincture of saffron, castor and amber, camphor, theriac, diascordium, confectio hyacinthina, compound contrayervapowder, and the like. Some of these likewise afford remarkable relief to the derangement of the nerves and spasmodic affections. Camphor also is supposed to have this advantage, that, when it is mixed with galbanum and sulphium (bastard marigold), it proves not only remarkably resolving, but also procures sleep, and therefore prevents or removes watching and delirium. But in the employment of all these, we must not only look to the temperament, habit, age, sex, climate, and other circumstances, but there must also be some moderation observed, that the fluids may not be too much agitated, and heated, or sweat too soon called forth, especially at the beginning and during the advancement of the disease. From the former of which hot fits and flushings would become frequent, and likewise

spots and miliary eruptions, with anxiety, delirium, and oppression of breast, would follow. From the latter, in consequence of the excessive loss of fluids, and resolution of the strength, tremors, subsultus tendinum, shiverings, syncope, cold sweat, and lethargy, might be apprehended.

* See Van Swieten on Boerhaave, § 950.

291. But a simple plan of cure, if it is to be recommended in any case, is certainly to be adopted in the present.

The simplest mode of cure the best.

For the less the operations of nature are disturbed by art, the milder and safer the remedies we employ are, the more successfully do we restore the patient's health. Several physicians of considerable name employ merely whey prepared with canary wine, for the common drink. Others add to purified whey some Rhenish or Austrian wine, or some other acid or fourish kind. Some prefer infusions of sage, scordium, elder-flowers, and other correcting plants; while others recommend decoctions of scorzonera, (viper-grass), eryngium, (sea-holly), or hartshorn, or ptisans of barley, succory or grass. To which they add some wine or vinegar, and cause them to be drunk warm. While these are employed, a gentle sweat generally breaks out, by which the vital powers are roused, and the noxious matter, whether generated in the sy-

stem, or raging epidemically, and absorbed into it, or supplied by the atmosphere furcharged with poisonous vapours, occasioning the whole disorder, is expelled from the body.

292. The patient, therefore, must drink frequently and freely of these (291.),

but not so abundantly as in more Rules with regard to the drink. violent and ardent fevers, or the

petechial disorder itself, in which sometimes the fever, especially at the beginning, is more vehement, and the pulse usually stronger and harder, unless the complaint seem to be combined with the inflammatory diathesis, or with other affections requiring more copious and watery drink. Pure water alone is seldom sufficient, as it can scarcely be intimately blended with the blood, unless sugar, or some saponaceous vegetable juice be added to it. Nor must it be given cold in this fever, although it is recommended by many. For Huxham assures us, that it passes off perfectly limpid, without having undergone any kind of change, to the great injury of the patient. But in this case also the country, season, temperament, habits, &c. of the patient, must be kept in view, which sometimes require cold; in preference to warm water. Cold water perhaps is especially improper, when no marks of dissolution of the blood can be detected, as generally happens in the *sporadic* and spontaneous kind; while

in the *epidemic* and *contagious* kind, in which there commonly occurs a dissolution of almost the whole blood, it may be attended with considerable utility. Likewise weak chicken-broth, or that of vipers, both as a remedy and by way of nourishment, is used by some, especially as the disease remits, and the strength fails; on which account hartshorn jelly, panada, with the addition of a little wine, or lemon, orange, or citron juice, are recommended; with which the patients must frequently be nourished, but in a gradual manner.

293. But the various symptoms require particular consideration. Evacuations of every kind, as we have already remarked, are very apt to become excessive in this fever; yet the suppression of them is attended with great danger, giving rise to very bad metastases of the morbid matter to the internal parts of the system. Therefore, if they be moderate, they may be permitted; if immoderate, they ought to be checked, but not wholly suppressed. For frequently, on suddenly suppressing the sweat, convulsive shiverings immediately succeed, with oppression at the breast, restlessness, grief, fainting, and other very severe symptoms of that kind. Thus, on suppressing the diarrhoea by means of astringents, it is a certain fact, that nausea, pain of the stomach, gripes and

The symptoms to
be cured.

delirium, are the consequence. Nay, it is not unattended with danger for the ulcers caused by the cantharides to dry up too soon. It is, therefore, necessary now and then to induce new ones, that such an useful kind of evacuation may not fail. For cantharides prove serviceable, not only on account of the stimulus they occasion, but on account of the resolution and excretion of the vitiated humour, which ought by all means to be attempted, as is pointed out by the pustules which spontaneously break out at the height of the disease, and become ulcerated, shewing clearly where it should be directed. For which reasons the sudden application of the cold air should be avoided, as also that of cold linen, cold drink, and all those things, in fact, which prove refrigerant and repressing.

294. The sweat, therefore, when it is excessive, affording no relief, and wasting the strength, (since it evidently ^{Management of the sweating.} shews marks of colliquation), ought to be cautiously checked. This is effected by nothing better than by red or strong wine, or that which is diluted with water; by which both the sweating is repressed, the strength recovered, and the eruption of pustules, if it be present, promoted. This end is also attained by the tincture of bark, now and then interposing a small dose of rhubarb, in order occasionally to draw off any

fordes from the *prima via*. Thus, not only is the sweating suppressed, but it sometimes happens that the fever itself, which towards the end of the complaint usually becomes remittent, has more distinct accessions, which are then to be completely removed by the bark. Huxham, with this view, used a particular tincture *, with a few drops of elixir of vitriol, according to the London Pharmacopœia. The diarrhoea is checked by the Theriaca-Andromachi, the Diascordium Fracastorii, or demulcent clysters. Prosper Alpinus affirms, that the colliquative purging, which supervenes on the malignant fevers of the Egyptians, is most safely allayed by barberries, and that he himself was cured by means of them,

* *Huxham's Tincture.*

Rec. Cort. Peruv. opt. pulv. unc. ii. Flaved. aurant. unc. ii. et sem. Rad. Serpent. Virg. drachm. iii. Croc. Anglic. scrup. iv. Coccinel. scrup. ii. Spirit. vini, unc. xx. f. s. a. Infusio per dies tres, aut quatuor, deind. liquor coletur. Dos. a drachm. i. et unc. sem. quavis. quarta, sexta, aut octava hora cum decem, aut viginti guttis elixirii vitrioli ex vino diluto, aut aqua idonea.

295. But sometimes so great is the dissolution of the blood in this fever, especially the epidemic kind, or that occasioned by contagion, or the ship or jail kind, that it not only gives rise to all sorts of immoderate evacuations, but likewise

How to oppose too great dissolution of the blood.

produces hemorrhages, black stools, gangrenes, vibices, and black spots ; all proofs of a fetid corruption having taken place. When this happens, the common practice is to have recourse as quickly as possible to acids, especially vitriolic acid, as checking the dissolution and alkalescence of the blood, and to mix them largely with the drink : A practice which is certainly well founded. But since such acids possess the power of destroying the irritability of the heart and arteries, which in this complaint is already nearly extinguished, it must not be adopted inconsiderately *. It is undoubtedly proper to change the putrid or alkaline principle, and coagulate the excessive tenuity of the blood by means of acids, but, at the same time, the languid irritability of the heart must be guarded against, which is best done by adding to the acids alexipharmacs, or antiseptics, possessing a gentle, aromatic stimulus, as Huxham used to do in the tincture already mentioned, or as is done in the vitriolic elixir, in which the aromatic tincture, added to the oil of vitriol, fulfils each indication.

* The copious employment of fossil acids, which is highly recommended by some, is objected to by M. De Boissieu, who advises their being only used very much diluted, and with great caution. *Memoir. sur le method. rafraichissant et echauffant*, p. 65.

296. When the whole mouth and lower part

of the fauces are beset with aphthæ, which generally happens about the height of the complaint, or a little later, or when they extend to the *œsophagus*, stomach, and intestines, frequently giving rise to difficult deglutition, hiccup, diarrhœa, and dysentery; it must immediately be washed with gargles possessing both an emollient, detergent and antiseptic quality. It is generally of advantage to add to them some of the spirit of salt, both acid and sweet, especially when they appear gangrenous and black. It is also proper to administer a small quantity of rhubarb, prepared with absorbent and aromatic powder. Sometimes the aphthæ are extremely painful, and completely prevent the patient from sleeping. If milk kept for some time in the mouth, be found of no service in relieving the pain, or vitriolic acid prepared with honey of roses, or other such remedies, I have sometimes found it of advantage to touch them with a pencil tipped with balsam of Saturn. When we use a gargle, after each time of employing it, a little of the mucilage of fleawort-seeds and quinces, mixed with syrup of mulberries, or rasp-berries, should be taken into the mouth and swallowed slowly. For in this manner the ulcers are rendered milder and are sooner healed. After cleansing and purifying the ulcers, liquor of myrrh

per deliquium, or the tincture of the same, proves very serviceably.

297. Sometimes a great quantity of phlegm is collected in the fauces, even endangering suffocation. When this happens, a gentle emetic must be employed. For it is really surprising of how much service this remedy is at every stage of the disease. Sydenham* by means of it sometimes successfully relieved patients, anxious every moment from the danger of suffocation, overwhelmed with stupor, and almost prevented from breathing on account of the fauces being filled with mucus or viscid saliva. Not unfrequently patients are affected with fainting and languor at the stomach, and can with difficulty be persuaded, even when thirsty, to drink; as if they laboured under hydrophobia. Frequently that proceeds from depraved digestion. Then, after giving a cordial, it is of great advantage one or two hours afterwards to excite vomiting, and thus to cause the rejection of viscid fordes occasioning † these symptoms.

When suffocation from mucus threatens, what is to be done.

How to remove spurious hydrophobia.

* Variol. regular. an. 1667, 1668, 1669. Oper. p. 178.

† Carol. Barbeirac. Medicamentor. constitut. p. 47.

298. Frequently, though not always, as has
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already been observed, peticulæ, or miliary pustules, supervene on this fever during its progress, or at its height.

The spots and miliary efflorescence.

Howsoever they make their appearance, whether they are critical or not critical; that is, salutary or not salutary, they always carry out some of the corrupted, putrid, and vitiated humour; except in that case in which the hot regimen, and remedies causing excessive sweating, have given origin to them. When, therefore, they are the effects of nature, not of art, the cold air must be particularly avoided, and mild cordials should be given, that the motions and efforts of nature may be very gently supported. For if, either in consequence of the application of cold air, or the force of the heart failing, they are forced in, often fatal metastases ensue. When the spots appear black, brown, or livid, resembling little gangrenes, and shewing a putrid dissolution of the blood, in consequence of which sanious and bloody stools likewise sometimes happen, or the blood when drawn remains fluid, and is very difficultly coagulable; in that case there is need of acid and austere alexipharmacs. Such are elixir of vitriol, spirit of sulphur, vitriolated tincture of roses, juice of four grapes, Peruvian bark, Virginian snake-root, red wine, with decoctions of cinnamon or mace, and the like.

299. But if by accident, cold, or in consequence of inconsiderately changing the linen, or any passion of the mind, the petechial spots, or miliary pustules, retire into the system, and afterwards affect the head, breast, or stomach; delirium, convulsive motions, dyspnœa, anxiety, hiccup, palpitation, intermission of the pulse, and other very bad symptoms often arise; in that case, in order to draw out the morbid humour, the feet should be immediately immersed in warm water, or the legs should be wrapt up in flannel, steeped in warm water, and afterwards wrung, or the whole body should be rubbed, or the skin should be relaxed by cupping-glasses. With that view likewise cantharides are applied to the arms and calves of the legs, and blisters to the soles of the feet. But internally infusions of gently diaphoretic herbs taken warm, while the body is at the same time pretty heavily covered with cloaths, considerably promote the sweating and eruption. This quality is said to be possessed in an eminent degree by spirits of hartshorn, or the same with amber, Virginian snake-root, camphor and musk; of which the two last mentioned wonderfully allay the nervous sensibility, and spasmodic affections. Quarin *, however, informs us, that when the pulse is languid, but soft and equal, camphor is preferable; when somewhat hard and

What the striking
in of the eruption
requires.

tense, musk, as being better adapted to the nerves, and supposed to act upon the heart more gently and less permanently than camphor. But if the striking in of the pustules aggravates the fever, and is accompanied with a strong, great and hard pulse, flushed face, and other marks of an inflammatory diathesis, and the inflammatory diathesis of the system which preceded, or seems to prevail, is revived, sparing bleeding employed immediately will be found preferable to all other remedies,

* Method. med. Febr. cap. iv. p. 55,

300. Sometimes the patients, even without the eruption retiring into the system, become anxious, and are harassed with constant watching. In that case some practitioners immediately have recourse to narcotics. But it is a wiser plan, when the brain is remarkably affected, or the nervous power is languid, or much predisposed to languor, to employ the milder remedies called anodynes, than such as contain opium in their composition. Of these the safest seem to be the *liquor anodynus mineralis*, camphor, musk, emulsions of the cold seeds, and syrup of white poppy; and, if ever there be occasion to have recourse to the stronger remedies, let those be selected which are made up with opium rendered in some

How to obviate
the watching.

measure milder, and blended with gentle stimulants, such as theriaca, diascordium Fracastorii, and the like.

301. It is necessary likewise to direct our attention to the worms, which, as has already been observed, are very frequently the concomitants of this complaint, especially in the epidemic kind, or when it is conjoined with depraved digestion. These, when they are lodged in the stomach or intestines, aggravate and render more obstinate all the symptoms, as nausea, fainting, vomiting, deep sleep, trembling, and hiccup; but they particularly occasion frequent and sudden changes, which alarm the physician, transient flushes in the cheeks, disturbed sleep, itching of the nostrils, gripes, colic, diarrhœa, separation of the eye-lids, leaving the white of the eye exposed. But the most frequent proof which I have observed of the presence of worms, is an unusual craving for food, and the suddenly starting up terrified from sleep. When, therefore, in addition to these symptoms of the presence of worms, they are actually passed, if cathartics, clysters, and fossil acids, fail in expelling them, other anthelmintics must be employed, among which worm-feed and wild valerian hold a conspicuous rank.

When combined with worms, the plan to be followed.

302. We have already made mention (276.)

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of the abscess of the ears and swellings of the parotids. For in these fevers the ears

How to treat abscesses of the ears and swellings of the parotids.

not unfrequently are affected internally with pain, suppurate, and an abscess is formed, giving rise to a copious discharge of purulent matter from them. When that happens, if the disease remits, if the head is relieved, the coma removed, the mind recovers its usual vigour, and the other symptoms are mitigated ; the most obvious inference is, that the morbid matter is carried to the external parts of the system, and that the internal parts are freed from the complaint. On the contrary, if the pain of the ears comes on while the disease continues violent, and the severe symptoms do not abate ; nay, if the coma, delirium, stupor, and distensions of the nerves, are aggravated, there is then reason to apprehend, that the inflammation and suppuration are propagated from the brain, and internal parts to the surface. As the former of these accidents is usually attended with a salutary effect, so is the other pernicious in its consequence. In the former case it is proper to relieve the pain by the frequent injection of tepid new milk into the ear, and by emollient cataplasms ; next the pus must be washed off with simple barley-water, or that which is slightly sweetened with honey. There is seldom occasion for other remedies ; of which, however, we shall deliver a fuller cata-

logue, when we come to treat of otalgia, and injuries of the ear. But in the latter case resolution must be brought about, and, as far as possible, suppuration of the internal parts must be prevented by the means already prescribed in the case of *cephalitis* or *phrenitis*.

303. But it more frequently happens in this and other malignant fevers, especially epidemics, that abscesses take place about the ears, and the tumors which rise behind or under them receive their name from the parotid gland, which is of the conglomerate kind; this has been mentioned already in par. 276. I suppose every body knows that there are two kinds of swellings of the parotids, namely, a primary and secondary kind, and that it is of this last we speak here. The secondary swelling of the parotid supervenes upon fevers, either by *metastasis*, or the translation of morbid matter from a part of the system of greater, to one of less importance, or by *epigenesis*, or the propagation of the disease, or the accession of a new symptom. It is of great consequence to know, whether it arises in the former or latter manner. But the parotids become swelled in a variety of ways, as we learn from pathology. Generally, however, they swell on account of the excessive influx of fluid, or lentor and density of

Two kinds of swellings of the parotids.

it, or laxity of the vessels and whole system, or irritation of the nerves, or obstruction of the fluid to be excreted, and obstruction or spasm of the excretory ducts. But irritation of the nerves is the most frequent cause; as Hippocrates in many passages seems to hint*; for as the nervous power contributes greatly to perform the natural secretions, so, when deranged, does it occasion their being weakened and vitiated: Hence Puiatus, with Hippocrates, contends that most of them happen in a *convulsive manner*.

* Vid. Puiat. de morb. Naronian. sect. 2. c. 12.

† Ibid.

304. Hence the termination of the swellings of the parotids is various; nor can any certain conclusion on the subject be drawn from the writings of Hippocrates, or others. For it appears from them, that suppuration, which is held to be of great consequence, is neither requisite to the crisis of the disease, nor does it to a certainty occasion the crisis. For frequently, in consequence of resolution, the patient gets well; but suppuration is succeeded by death. The more generally received opinion is, that when such a swelling is attended with alleviation to the fever and pains, that it will prove salutary, and *vice versa*. But frequently the fever, which had begun to remit, is

Various terminations of these swellings.

shortly afterwards aggravated, and the danger, which had appeared to be removed, returns. "On the whole," says Duretus*, "swelling of the parotid gland does not afford any favourable hopes, because it is an abscess of the kind named *ἡμιρροπος*, and not *αυτιρροπος*; that is to say, one of divided afflux to the parts, and not adequate to the removal of the disease." But Puilius pronounces them to be in general dangerous†, because the lymph being incapable of entering the glands when swelled, is carried along with the blood to the brain, overwhelming it with a collection of serum, and so compressing the jugular veins and fauces, that the return of the blood from the head is obstructed, and the respiration and deglutition very much affected, to the imminent hazard of the patient's life.

* In coac. Hipp. n. 110. The words of the original are: "In univcrsum parotis sperabilem vitæ salutem non facit, quod sit *ἡμιρροπος*, neque *αυτιρροπος*, i. e. affluxûs dimidiati nec morbo paris."

† L. c.

305. For my part I am disposed to think, on the whole, that the swellings which take place in consequence of *metastasis*, are salutary, while such as occur by *epigenesis*, and in the convulsive manner, or are symptomatic (303.), generally prove hurtful and fatal. For it has frequently been found that those swellings,

Those which are salutary, and otherwise.

which increase soon, that is, within the space of twelve or twenty hours, or are soft like a flatulent tumor, either with or without inflammation, or occasion violent pain, were always pernicious; while those which at the very beginning are hard and rigid like a tendon, and oblong, gradually increasing and attended with tolerable pain, were usually of a salutary kind, particularly if by increasing they preserve their hardness some time. But if those hard swellings have a circumscribed line of different colours like the rainbow, or become red, livid or black, it is to be accounted a bad symptom; for it is a sign * of gangrene, not only of the tumor but also of the neighbouring parts, having been induced by the poison. And hence it will not be difficult to understand when the swellings should be brought to suppuration, and when they may be discussed and resolved without risk. They likewise disappear spontaneously without danger, (as appears from the observations of Hippocrates), by looseness, dysentery, and by the urine with a thick sediment, by a cough with copious spitting, and, lastly, according to some, likewise by the insensible perspiration. .

* Ex Diemerbroek. Bonet. Polylath. T. 1. l. 1. art. 9. p. 436.
§ 30. 31. 32. likewise Paræus, l. 21. c. 30.

306. When the swelling first appears, the

practitioner should endeavour to ascertain whether it is critical or symptomatic ; whether it relieves the head and fever, or renders the disease more severe by the new symptom. In the first case, the malignant and noxious fluid, which passes into the part, ought to be accumulated there, matured by concoction, and a speedy passage should be procured for the pus that is formed. In the other case, it is better to gently attempt resolution of the tumor, and by means of the due evacuations to relieve nature from the load. Whenever the tumor, therefore, shews itself, two things are particularly requisite, namely, to prevent excessive pain in it, next that it may increase slowly. With that view an emollient fomentation or cataplasm must be applied to it, possessing the power by its anodyne quality of alleviating the pain, taking care that it may not prove hurtful by its weight, or by its greasiness or gluiness obstruct the pores of the skin. The roots of marshmallows and white lilies are commonly employed, though some think they ought to be rejected on account of the mucus with which they abound, and which is supposed to obstruct the pores. The most convenient cataplasms or fomentations are reckoned such as are composed of flowers of violets, verbasum, wild poppy, melilot, elder, mallows, lintseed, white poppy, barley-flour, crumbs

The cure to be adopted is them both.

of bread, and other things possessing an anodyne and lulling *power*. To these may sometimes be added saffron and camomile flowers, if resolution at the same time is indicated.

307. By these means we prevent both the pain and too great conflux of fluids to the part, with which the tumor is rapidly increased to an excessive degree. But if the suppuration goes on slowly, it may be promoted by means of some mild remedy. Puilius prefers the great diachylon plaster to all others. When the pus is formed, an outlet must quickly be made for it by the lancet *. It is proper also to open the

How and when
they should be
opened.

unripe tumor, if it straitens the fauces by its size, hinders the blood's return from the head, threatens suffocation, or is caused by a pernicious fluid. In which case some recommend the cautery in preference to the lancet. But this is effected more safely by the lancet, and the fluid passing out sooner by the wound, the tumor collapses. After procuring a passage by incision for the pus, what remains of it ought to be digested by means of the *digestive* ointment, and the application of the great *emplastrum diachylon*, or an emollient cataplasm composed of the ingredients already specified. If it is necessary for the concoction to go on more powerfully, on account of the lentor, viscosity, and coldness of the fluid, it proves of very great advantage to

add to the digestive plaster some sweet mercury. But when, instead of pus, an acrid and sanious ichor passes out, the lips of the wound are pale or livid, and a putrid smell implies the near approach of putrefaction or gangrene; it is then necessary to add some of the powder of camphor, or to cover the whole tumor with camphor prepared with gum-arabic, or other such antiseptics, until the tumor being wholly converted into pus, and the cavity of the abscess being cleaned, the wound closes.

* It is surprising that Acrelius remarks, that the swellings of the parotids, although perfect suppuration has taken place, are not always opened with safety. For he mentions, that some years ago the French soldiers in Bohemia, in consequence of excessive cold and fatigue, fell into a very putrid fever, on which supervened abscesses behind the ears, under the arm-pits, and in other parts, with a manifest diminution of all the symptoms. Practitioners at first used to open them, as critical, after they had become perfectly ripe. But afterwards they relapsed into a state of debility, and the symptoms gradually returning, most of them died within the space of eight days. Of these, some, after a fluctuating humour had been discovered to a certainty in such tumors, discharged matter from the intestines, by the mouth or nostrils, and almost all these were saved. Hence physicians, taught by experience, laying aside the incision of those abscesses, no longer attempted either suppuration by external means, or resolution by evacuants. But when the abscesses completely ripened, they gave the patient a purge of manna, rhubarb, or Epsom salt. For the most part, after the third dose of the medicine, stools, generally of a purulent kind, came off; the patients were refreshed, the abscesses were diminished, and at length disappeared. They

employed a spare diet, without salt and aromatics, and a bland demulcent kind of drink. See the Edinburgh Medical and Philosophical Commentaries, T. 1. P. 4. sect. 1. n. iii. If this be true, it is of such rare occurrence as to make no rule. Were the corruption and gangrene promoted by the admission of the air? Their cause is referred by Berlinghieri (*Dell' Idropia saccat.* p. 121.) to the pestilential air which happened to prevail at that time. Could it have been prevented by antiseptics employed internally and externally? Was pus passed by stool, by the nostrils, and mouth, or was the swelling resolved, and nature relieved by any other evacuation? I would not take upon me to determine on any thing for certain it is doubtful a matter.

308. But if anodyne or emollient remedies prove of no service, and the swelling increases too much, and becomes excessively painful, but much more if at the same time it is red, blood should be let immediately. Nor are symptoms of plethora necessary in this case, as Galen * supposed, but great tension, irritation, and spasm of the affected part are sufficient. Nor is bleeding prevented by smallness or weakness of the pulse; for frequently after letting a few ounces, the pulse is raised and becomes stronger. For the strength then seems rather oppressed and resolved, than worn out. The same remedy must be quickly employed when the swelling is symptomatic, or arises by *epigenesis*, or from spasms at the lower part of the abdomen. Riverius, in the epidemic fever which committed such havoc at Montpellier in the year 1623 †, by means of bleeding so suc-

cessfully removed the swellings which broke out, and which, before having recourse to this remedy, uniformly proved fatal, that not one of such as were bled, even when the pulse was languid, died. Traversarius, also, on Lancisi †, affirms, that in the fevers which prevailed from the year 1709 to 1711, blood-letting was very happily employed to remove these tumors. Puiatus ‖ likewise gives his testimony in favour of such a practice: nay, he shews, by examples adduced, that blood may be let not only at the breaking out of the tumours, but also during their progress. Azzoguidi, a physician of great celebrity and experience, and Professor of the Practice at Bologna, used to treat these tumors in the same manner, ordering blood to be drawn the moment they appeared; nor have I ever observed any bad consequences to result from such a method of treatment §.

* De compos. pharmac. secund. loc. l. 3. c. 2.

† Prax. med. l. xvii. c. 1. p. 354.

‡ De nox. palud. effluviis, l. 2. epid. 4. c. 5.

‖ De morb. naron. sect. 2. c. xii. p. 198. et seq.

§ I have very often found swellings occur in patients treated by other physicians, but very seldom in such as I myself attended; though, during the space of thirty years, a vast number have come under my care. Hence I am led to suspect, that the symptomatic and pernicious swellings of these glands, (which we have read to have been relieved by bleeding), arose either from bleeding having been improperly neglected at first, or from a sufficient quantity not having been taken to remove

them. For frequently those sanguineous glandular swellings, as Trallianus calls them, likewise originate from an inflammatory diathesis of the blood, with which fevers are often combined in certain constitutions. This suspicion of mine is favoured by the appearance of the blood when drawn. For, according to the testimony of Riverius, it is generally *corrupted* and *putrid*, *i. e. inflammatory* and *pleuritic*, covered with a white firm coat.

309. A prudent physician will be enabled to judge what quantity of blood should be taken in different cases. If the strength be much reduced, three or four ounces may be drawn from the veins of the arm. If the pulse be raised in consequence of this, the bleeding may be repeated a few hours afterwards, to the extent which seems most proper. But if, after having considered every circumstance, opening a vein cannot be attempted, leeches may be applied round the tumor, and thus the pain is relieved, and the danger of suffocation removed. In consequence of blood-letting, the swelling subsides, the pain is diminished, the head relieved, the respiration becomes freer, but resolution of the tumor does not always take place. For suppuration, but of a milder and better kind, supplies its place, which is by no means a bad symptom. But when no signs of approaching suppuration take place, or the swelling is symptomatic, so that it appears to be more useful to resolve it, after bleeding, re-

The quantity of
blood to be ta-
ken.

solution must be gently attempted both by internal and external means, to which, also, every kind of revulsion tends. Riverius, next day after the bleeding, used ^{How to attempt resolution.} to prescribe a cathartic. For thus he not only very successfully produced revulsion from the superior parts, but likewise ejected part of the morbid cause from the system. It is likewise serviceable to excite a free discharge of urine by aperients and diuretics, and also to employ those remedies which occasion a copious flow of saliva, and spitting, and to gently gargle the the throat, that all the glands opening into it may pour forth their fluid in greater quantity. A plaster of hemlock, or ointment of arthanita, or soap boiled down with milk, and other resolving means of a milder kind, may be employed externally. These swellings also are sometimes resolved merely ^{If they suddenly strike in, they must be recalled.} by the perspiration; and although they have arisen by *metastasis*, if they disappear slowly and gradually, the resolution of them is then found to be altogether harmless. On the other hand, if they disappear all of a sudden, extreme danger is threatened, unless the malignant matter be discharged by some increased excretion. When this may be apprehended, the tumor must be recalled by attracting remedies and cupping-glasses, or an ulcer

must be induced in the part ; and cantharides are applied in various parts to excite blistering, and other revellents are usefully employed.

310. In this fever I have already remarked (285.), that cathartics are of a suspicious nature,

as endangering *colliquative* diarrhoea's, which can scarcely be stopped. But as the disease draws to a conclusion, we may occasionally

Whether purging
may be employ-
ed at the end of
the complaint.

cleanse the intestines of fordes, by a gentle cathartic, as rhubarb, cream of tartar, myrobalans, or the like, interposing cordials and paretics, now and then, to prevent excessive looseness. For thus not only the *primæ viæ* are purged of the recrementitious parts of the morbid matter, but it often happens that the fever, which was at first continent, at length becomes a remittent, or a periodical intermittent, which is to be completely removed by the Peruvian bark.

311. With regard to the mode of living ; the food should be such as is calculated for other

acute diseases, but at the same time nourishing and restorative.

The proper regulation of this alone, and time, perform great part of the cure. The poorer people, generally content with patience, and proper attention to the regulation of the diet alone, despising all kinds of drugs, recover more certainly. It is necessary to pay particular atten-

tion to the loss of strength occasioned by an unusually malignant fomes, or any excessive evacuation. The patient, therefore, should use a liquid, spare, but restorative kind of food, which, though it be rejected from the stomach, should be frequently forced, as it were, upon him. For in no case does abstinence, or very spare diet, prove more hurtful than in this fever. Dr Buchan, with this view, highly extols

Wine useful.

Bordeaux wine; and mentions,

that not a few patients have been restored by daily giving a bottle of that wine with whey, or a decoction of barley and oats, even when they seemed to be without a pulse, and were affected with perpetual delirium and coldness of the extremities, indications of the near approach of death*. In the mean time, rest both of body and mind must be enjoined. The

Moderate heat.

heat of the chamber ought to be moderate, and the air infected with exhalations and vapours ought to be corrected by the admission of that which is fresh. For

by means of the heat and alexipharmacs employed by some to promote the sweat, the patient is relaxed, not re-

Renewing of the air.

freshed. But such is the power of pure and fresh air, that the *ship*, *jail*, and *hospital* fever, by removing the patient from the ship, prison, or ho-

spital, where he is confined, to fresh air, often abates, and is more easily and quickly cured.

* Domest. Med. T. 2. c. 8.

312. I observe more species of this fever, or typhus, as he calls it, than proper, mentioned by Sauvages. For the third species, named by him *Typhus*, or the *febris maligna cum sopore* of Riverrius, (Observ. ab anonymo communicat. obl. 4.), belongs to the species of slow nervous fever arising from contagion (279), in which the heat was uniformly the same from the beginning to end, and which was resolved on the sixtieth day, by a great quantity of viscid expectoration. The second species of the same, or the *typhus nervosus*; the first species, or *typhus carcerum*; spec. g. or the *miliaris nautica*; spec. h. or the *miliaris purpurata*; spec. 5. or the *typhus castrensis*; spec. 6. or the *typhus Ægyptiacus*; are considered by Cullen * rather as *synonyms* than *varieties*. The same author seems to doubt of the *typhus byslericus verminosus*. sp. 4. of Sauvages, of the *typhus exhaustorum*, sp. 8. and of the Typhus a Mani-puera, sp. 9. since he tells us, that his mind is not sufficiently made up about them. But I suspect that Cullen himself has referred to typhus fever, many kinds of fever which are widely different from it, and that he has thus fallen into

the same mistake. Let us take for an example, the *febris pestilens hectica* of Forest, (l. vi. obs. 32.), which is by no means a species of typhus, since, if I mistake not, it clearly appears to have been a *malignant gastric fever*, with which constancy of the fever and deep sleep,—which are peculiar to typhus,—were entirely unconnected. The distinctions of the other fevers, which are improperly considered as being species of the typhus, will appear, I hope, partly from what has hitherto been laid down, and partly from what shall be said hereafter. The epidemic fever of the year 1779, described by Tessierius †, truly belongs to this kind of slow malignant fever.

* Gen. morb. cl. 1. sect. 2. genus. v.

† Mem. de la Soc. Roy. de med. vol. iii. p. 23.

HECTIC FEVER*.

313. Hectic fever is so called, because the whole habit was believed by the ancients to labour under it. For it was formerly

Definition.

supposed, that it arose from preternatural heat in the solids which was constantly present in them. But it is a kind of fever observing the nature of a continent one, remaining a very long time imperceptibly, and without remarkable loss of strength, and with slight quickness of pulse, somewhat aggravated after meals, and attended with extreme emaciation. Hence it is also called by some, *habitual*, or *slow*. It is

Primary and
symptomatic.

usually divided into *primary*, which arises spontaneously, without being preceded by any other complaint; and *secondary*, which is occasioned by some preceding disease, and likewise into *symptomatic*, which is the effect or symptom, as it were, of the presence of another complaint. *Primary*, or *essential*, or, according to others, *simple hectic*, occurs so seldom, that it may be doubted whether it ever exists. On which account some have entirely denied it †. I can only observe, for my own

part, that in the whole extent of my practice, I do not recollect to have any where seen such an hectic; nor did Cullen †, to whom hectic appears always to be *symptomatic*, or at least generally so, as he conjectures, from the various species which Sauvages || has classed under this head §. But the *symptomatic* hektics, of whatever kind they may be, are referable to the *slow remittents*, the *amphemerinæ*, often to the febres *anomalæ* and *inæquales*, and consequently cannot be considered as true hektics, holding on in their course after the manner of continent fever.

* *Synonyms.* The *Hæctica primæ* and *secundæ* speciei of Galen, de diff. febr. l. 1. c. 8. and all his followers. The first species of slow fevers, named *hæctica* by Ludwig, Com. Lips. vol. 7. part 3. p. 450. The *febris lenta* of Junker, Consp. med. theor. pract. Tab. 69.; and of Hoffman, Med. Rat. Syft. T. iv. sect. 2. c. xviii. § 2.

N. B. Hoffman and Junker distinguish from the slow fevers, (which are the same with them as our *primary hektics*, the *hectics*, properly so called by us, as being more symptomatic, and supervening on severe ulceration, vomitæ, abscesses, and putrefaction of the viscera; or, what amounts to the same thing, they bestow the name of *slow fevers* on primary hektics, and of *hectics* on the symptomatic ones.—The *febris habitualis*, or *hæctica* of Jo. Raym. Fortis, De febr. et morb. mulier. p. 351. The *hæctica κατὰ ἔξιν*, juxta habitum, or *habitualis* of Bellini, De febr. p. 163. op. T. 1. or P. i. ed. venet.

† Vid. Piens. p. 2. De febr. p. 49.; and Ettmuller, Oper. omn. T. 2. P. 1. p. 367.

‡ Gen. morb. cl. 1. ord. 1. sect. 2. gen. vi.

|| Nosol. meth. cl. 2. ord. 1. gen. v.

§ The species of hectics mentioned by Sauvages are, the *chlorotica*, *syphilitica*, *scrofulosa*, a *calculis*, ab *hydropibus*, a *vermibus*, *cachectica*, a *fluxibus*, &c. all of which, as appears, are clearly symptomatic, and, besides, have exacerbations and remissions. But what he calls *infantilis* (sp. 1.), since it has no character, according to both Cullen and myself, must be of the kind called *rachitica*, or *scrofulosa*, or *venenosa*, or *mesenterica*, or symptomatic of other diseases. Moreover, that species is undoubtedly *symptomatic*, which succeeds to phthisis, ulcers, abscesses, fistula's, scabies, and similar complaints. The *hectica vespertina* (sp. 2.) can scarcely be esteemed a disease, nor enumerated among the hectics, because uniform continuance, which is peculiar to hectic fever, is not present in it. Concerning the *hectica lymphatica* (sp. 12.), and *nervea* (sp. 13.), Cullen says he is not clear; and even if he were, no one would assert that they are *primary hectics*, since they all seem to be *slow*, but of the kind called *amblymerina*.

314. But since Galen * makes mention of the primary hectic, without omitting that of the *secondary* kind, and as Ettmuller asserts, that it has sometimes been

Description of
the primary
hectic.

observed by physicians, and several others acknowledge the same thing; I shall not neglect giving its description, such as I find it handed down to us, according to the different

stages which are usually considered in it. It is divided into three

stages. In the first stage the heat is extremely mild, and not even troublesome to the patient; the pulse moderately quick, but equal, and somewhat hard; and the

First stage.

utine does not differ much from its natural state. But the heat, which at the first touch seems mild, when it is examined more carefully, by applying the hand longer, is perceived to be acrid and gnawing, more particularly about the arteries and palms of the hand, than elsewhere. And the increase of this heat and quickness of the pulse after meals, is considered as a symptom almost peculiar and inseparable from this fever, without being preceded by any cold, or shivering, or any other symptom indicating a new accession. But in order the better to ascertain whether the fever be increased by eating, or it be a new accession which happens by accident at that time, change the meal-time, and let it be removed as far as possible from the usual hour. For if it really be an hectic, after one or two hours the heat will increase, together with the quickness of the pulse; or the increase will be anticipated or deferred, according to the time that is chosen for the experiment. But as this augmentation of heat depends upon such an external cause, and shortly ceases, it does not seem to affect the uniformity of continuance, which is the principal characteristic of this fever, so as to entitle it to be transferred to the class of remitting fevers.

* De diff. febr. l. i. c. 8. where the following observations may be found: "Those fevers, therefore, which are named

hectic, arise in two ways; in a great measure from the ardent fevers [nay, ephemeræ, quotidians, and others (204. and 242. &c.) already mentioned], which are protracted so long, that by their continuance they consume the fluid contained in the body of the heart; or it may happen, that a great portion of it may be still retained. Such fevers, however, are not only hectic, but also consumptive. Those, again, which are generated while the moisture still remains, when they affect the body of the heart, are very much inflamed, like lamps by applying a torch. And thus have we explained one way in which these fevers are generated. But the other is, when they come on at the beginning, from a similar origin with that of the ephemeræ, either from grief, anger, or excessive fatigue experienced under the scorching heat of the sun."

315. But the fever is more difficultly discoverable in the first, than in the second

Second stage.

stage. In the latter the heat of the skin becomes more evident; the strength is more sensibly reduced; the body grows more emaciated, and is not recruited by the aliment; the urine is passed red, deposits a sediment, and there rises to the surface a greyish, oily pellicle, on account of the fat which passes off by the kidneys, along with the serum of the blood, and swims on the surface. In the third stage the whole body decays; and such is the emaciation,

Third stage.

that the bones every where appear; the face is haggard; the temples become depressed; the hair falls out; the eyes sink in the head, and remain fixed, as it were; the nostril becomes

thin ; and the whole skin grows rough and dry. Then the hectic, because all the moisture seems to be exhausted, is called by Galen * *marasmus*. To those symptoms are sometimes added colliquative sweats, especially about the head and neck, and particularly at night, and putrid fluxes quickly extinguishing the remains of life. But the primary and peculiar symptoms are considered as being the heat increased by any kind of food within a few hours, slow emaciation of the body, quick, small, frequent, weak, and occasionally hard pulse. When these symptoms concur, they to a certainty imply the presence or near approach of hectic. But the redness of the cheeks, and other symptoms mentioned by writers in treating of hectic, rather belong to the symptomatic and phthical species.

* L. c.

319. Moreover, this hectic is distinguished from the *symptomatic*, and other *secondary* ones, because the latter arise either from an organic fault in some part, as ulcers, vomiceæ, abscesses, fistulæ, strumous tumors, scirrhus, cancer, and obstructions of the lungs, liver, spleen, pancreas, omentum, kidneys, uterus, stomach, intestines, or from some peculiar taint of the habit and blood, as scurvy, lues, cachexy, chlorosis, and other

Symptoms of the
secondary hectic.

kinds of depravation in the fluids ; and they are irregularly aggravated with uncertain accessions, and have the conjoined marks of these complaints or affections. Besides, it differs from the other primary colliquative fevers, because they are *acute* and *violent*, not *slow* ; because their commencement is early marked, they soon attain their height, and go through their course in a shorter period ; and, lastly, because the patient is only affected with emaciation after great eva-

How to distinguish
between colli-
quative and hec-
tic fever.

cuations. In hectic fever, on the contrary, the beginning is obscure, and for a long time the fever is slight, of long duration, and emaciation

takes place without any remarkable excess in the evacuations. But it widely differs

In what it differs
from atrophia.

from *atrophia*, or nervous consump-
tion, (of which hereafter), because
in the latter the body becomes emaciated without
any fever.

317. We have already shewn (313. and 314.)

Proximate cause.

what opinion the ancients entertain-
ed of the proximate cause of this fe-
ver. Bellini * does not differ much in this re-
spect from them ; “ it being,” according to him,
“ a warm and dry dyscrasy of the solids, wasting
their humidity, or the muscular and adipose sub-
stance, or the membranous and fibrous part, ac-
cording to the diversity of its stages.” It is a

doubtful matter, however, whether the preternatural heat and dryness be the cause or effect of hectic fever. For I should think that both may take place, according to the diversity of circumstances. For it is possible both that the blood, when surcharged with phlogiston and acrid may excite heat and fever, and that the fever itself may extricate acrid heat. Those who disapprove of the explication of the matter given by the ancients, consider "an saline-acid and acrid dyscrasy of the blood, conjoined with excessive lentor, as the proximate cause †;" while others conjecture, that "an alkaline and rancid acrimony" is often found in this fever, from the phenomena attending it, "whether it be the cause or effect." On the whole, they are all agreed in one particular, that they suppose it to be occasioned by the blood and acrid lymph ||. But as Hoffinan is of opinion that in the symptomatic hectics "some corrupted and putrid humour, completely inimical to the due and natural mixture of the blood and vital fluids, is the cause of the complaint," so in the primary hectics, which he calls *slow*, he thinks the cause of their origin various §, as it is confirmed by experience, that it arises from a great many evident, or protacarcic causes, not a little different from each other. It must be confessed, however, that by means of them all, as will appear immediately from the enumerating of them,

the blood is deprived of its bland and natural disposition and mixture.

* De Febr. p. 162.

† Etmull. Oper. T. 2. P. 1. p. 368.

‡ Schacht Instit. med. pract. c. vi. § v.

|| Ludwig. Comm. Lips. vol. 7. P. 3. p. 450. &c.

§ Med. Rat. syst. sect. 2. c. xiii. § 3. 4. and 5.

318. The preceding, or procatactic causes, therefore, occasion the heat in hectic fever, either because they consume * a great deal of the substance of the solids, or because they excite excessive heat, or because they may effect both, or because they retain something in the system which ought to have been excreted to prevent its proving hurtful. Such are long-continued and excessive evacuations, diarrhœa, dysentery, diabetes, salivation, gonorrhœa, fluor albus, excessive and frequent loss of semen, immoderate sweating, excessive hemorrhages from the uterus, anus, nose, and other parts; fasting, constant labour, violent exercise, watching, cares, nocturnal studies, intense study, ardent, acute, obstinate intermittents, and continued fevers of every kind, small-pox, measles, deficiency of critical or usual evacuations, too long retention, or inconsiderate suppression of them; and, lastly, a warm, dry habit of body, a warm and dry kind of air and climate, the abuse of intoxicating liquors, or acrid and heat-

ing food, melancholic affections, nostalgia, rage, love. To these ought to be added bad digestion, as a very frequent cause of this complaint, and excessive debility of the nerves, by which the concoction of the food, or the perfect assimilation and apposition of the chyle is impeded †.

* Bellin. l. c.

† Hoffman. l. c.

PROGNOSIS.

319. Every hectic fever by itself is exceedingly lingering and difficult of cure, and generally, after gradually wasting the patient for a considerable time, ends in death. For the most part the *primary* or *spontaneous* kind, chiefly produced by the abuse of the six non-naturals; and when not of long standing, and in a good habit of body, is attended with least danger. The *secondary* kind, (313.) succeeding to ardent, long-continued, or other acute fevers, is universally reckoned more difficult to cure, and more dangerous; but this is not the case with that which arises from hemorrhages, and other excessive evacuations proceeding from an evident cause; for it is more easily discussed by art. Lastly, the *symptomatic* kind, if it depends upon an ulcer in any of the viscera, or any other incurable disorder, is the most

difficultly curable of all, except that which supervenes on syphilis, scurvy, cachexy, and other faults of the fluids only, the cure of which, it is said, may sometimes be effected. Moreover, the first degree of the complaint gives us hopes; the second is attended with more difficulty; the third proves undoubtedly fatal. The prognosis also depends much on the patient's time of life. The young, provided with sound and healthy viscera, *ceteris paribus*, are more easily restored to health; adults with more difficulty, and more slowly; and the aged*, in whatever circumstances they may be placed, never recover. Not unfrequently *primary hectic* degenerates into *phthisis pulmonalis*, and other diseases of the viscera. The swellings of the feet and legs, which often come on in the advanced stage of the disease, are universally believed to announce that the patient is now past all hope. Hectic fever likewise proves more fatal to those of a warm and dry temperament and habit of body, than to such as possess a more moist and robust one.

* Ettmüller, l. c.

THE CURE.

320. In attempting the cure, we must consider whether the fever be *symptomatic*, or *spontaneous* and *primary*, or *secondary*. General indications. In the *symptomatic* species, the plan of cure must be regulated by the primary complaint, of which it is a symptom, and must be varied according to the diversity of it, as shall be shewn more properly hereafter, when we come to treat of diseases on which *slow fever* supervenes. In the *spontaneous* or *primary* species, as also in the *simple secondary*, it is generally proper to allay the excessive heat; to blunt or correct any acrimony present; to dissolve lentor of the fluids, if there be any present; to amend the dryness of the solids; by means of proper nourishment, to restore the body exhausted of its fluids, and in a state of decay; to obviate debility and relaxation; and to remove all kind of crudity from the vitiated digestion of the aliment. Hence, to effect these ends conveniently, the causes which have given rise to the fever must be kept in view, according to the variety of which different methods of cure must be adopted. If, therefore, the body is exhausted by immoderate evacuations (318.), and the fluids are Cure of the hectic from excessive evacuations. both too scanty and acrid, it is most proper to employ easily digested food, and nou-

rishing remedies, given sparingly, but frequently, and such as are adapted to obviate the peculiar acrimony. Among those weak animal soups, and soft-boiled eggs, but especially ass-milk and that of cows, hold a principal rank. But in the employment of milk, we must take particular care to cleanse the *primæ viæ*, and to remove all acids, that it be newly drawn, and a small quantity taken at first, gradually to be increased; that animal food be avoided, and that scarcely any other kind of food at the same time be taken. If the milk cannot be kept on the stomach at all, in its place may be substituted gruel of rice, oats, or barley, soup of frogs, snails, crabs, vipers, emulsions of sweet almonds, and the like. But since frequently, in consequence of excessive evacuations, the viscera and other solids are enervated, it is proper occasionally to employ along with nourishing substances such as are gently corroborant. And the quantity of food to be taken must be gradually increased.

321. But if immoderate evacuations, anxiety, watching, want, or the ardour of acute fevers has dissipated the fluids, increased the violence of the heat, and induced a warm or *alkalescent* acrimony; then whey, decoctions of succory, oats, barley, sorrel; the juices of acid or acescent vegetables; spirit of vitriol added to the drink, to

Cure of hectic
from excessive
motion and
warm acrimony.

produce an agreeable degree of acidity; the warm bath, than which nothing is more efficacious in allaying and attracting the heat; gentle anointing of the body after the bath, to prevent too great perspiration; pure country-air, somewhat verging on humidity; fluid and refrigerant food; are chiefly indicated. When the disease originates from the suppression of usual evacuations, or from the retention or suppression of critical matter, the former must by all means be recalled, and the latter must be moderated and brought away by excretion. With this view it is proper to employ diluents, sweet and opening remedies, and gentle diaphoretics, as ptisans, decoctions, and purifying soups, as they are commonly called.

Of that from suppressed evacuations.

322. But when hectic fever is occasioned by dyspepsy, and sordes of the *primæ viæ*, which very frequently happens, or succeeds to obstinate intermittents, in that case more advantage is derived from vomiting, or mild purging, now and then repeated, than from ever so many other remedies. After employing purging *per epicrasin*, bitter stomachics and strengthening means are proper, as infusions or decoctions of the root of taraxacum, succory, wild valerian, absinthium, agrimony, lesser cantarey, orange-pill, cascarilla, quassy, to

Of that from dyspepsia.

which may be added a little iron or steel, or some very mild preparation of it, as the *specificum stomachicum* of Poter, although it is undeservedly now almost forgotten. Likewise acidulated or mineral waters, as those of Spa, Pyrmont, &c. &c. and the like, taken in small quantity, and long continued, are of wonderful service.

323. The *antipeptic* of Poter was formerly in great esteem, by means of which, taken twice a day with conserve of roses, not a few hecticcs suspected to be combined with phthisis pulmonalis, are said to have been successfully treated *; nor is it a remedy perhaps entirely to be despised. Some even recommend *saccharum Saturni*, and various tinctures of lead, with the view of extinguishing the heat and allaying the acrimony of the lymph in this fever. But prudent physicians consider every kind of preparation of sugar of lead, and the various tinctures of lead, as hurtful and pernicious †. Most practitioners likewise reject blood-letting, and not without reason. Sometimes, however, at the beginning, when the disease has advanced little, the strength remains, the pulse is hard and strong, the patient is of the sanguineous habit, especially after the ceasing of any accustomed evacuation, or the blood is in a state of fervor, bleeding, provided it be sparing, and rather repeated at different

times, will be found most convenient for suppressing the disease at its outset. But if the hectic has arrived at the third stage, and there is scarcely any hope of recovery, it only remains to employ palliative means, as they are called, and as far as possible to obviate the distressing symptoms.

* Peter. Pater. infig. curat. et singul. observat; cent. i. c. xxiii. cent. iii. c. xix. c. xx. c. lxxviii. c. lxxxiii.

† These remedies act like a slow poison, and generally prove fatal by inducing glandular or strumous consumption. Tissot (*De colica Saturnina*) adduces a variety of instances of most dreadful colics having been occasioned by sugar of lead, and the antiphthifical tincture of Garaman.

END OF VOLUME FIRST.

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